Human Resource Management Practices Contributing to Competency Enhancement of Project Managers and Team Members in Project-Based Organizations: The Case of IT Industry in France

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Autumn semester 2017  
Master thesis, one year, 15 hp
Abstract

In the contemporary business world firms are being transformed into project-based organisations when majority of functions are performed through projects while administrative support is provided by permanent organisational structures. Moreover, variety of industries develop characteristics of Project-Based organizations which implies that HR practices need to be adjusted to help project employees to acquire necessary skills to adapt technology and help company embrace changes in business environment. Therefore, the current research through empirical investigation seeks to explore up-to date understanding of required competences for project members in IT industry in France. Further, it aims to explore how and what HR practices contribute to development of project team members’ competences.

The research employs multiple case study of four companies operating in France and IT industry is chosen as it best represents the project-based organisations. Data is collected through six semi-structured interviews and qualitatively analysed by two authors of the current research.

Findings of the current research provide an understanding of which and how HR practices are used in IT industry in France to enhance project team members’ competences. Empirical data analysis allowed to identify key HR practices employed in project-based IT companies to support competence development of project team members which are knowledge-sharing, training, induction, lesson-learned and internal rotation. Besides, social media and dedicated website were identified as major knowledge-support tools in IT industry in France.

Findings bring new insights to the relationship between HR practices and competence development in IT industry and highlights some discrepancies between literature and reality. Finally, they help to bridge the gap in the existing literature and to formulate some recommendations to the practitioners.

Keywords: Project Management; Human Resource Management; Competence Management; Human Resource Practices.
ACKNOWLEDGEMENT

We would first like to express profound gratitude to our thesis supervisor professor Vladimir Vanyushyin for his continuous support, patience, motivation and valuable comments through the process of writing this thesis. His help by steering us in right direction allowed this research to become the reality.

We express gratitude to all the Professors and support staff of MSPME-10 edition for arranging such a program and providing overall support.

We would also like to thank the participants of the organizations who were involved in this research project despite their extremely busy schedule by the end of the year 2017. Without their passionate participation, interviews would not have been successfully conducted.

Besides, we must express sincere gratitude to our classmates for the enriching discussions, for the sleepless nights we were working together to meet deadlines, and for all the fun we had during this Master study. Thank you all.

Boris: I would like to thank all my friends, classmates and colleagues for your participation and support, thank you so much for being.

Vusal: Finally, I would like to thank my family: my parents and my wife for constantly providing me spiritual support throughout my life.
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List of Abbreviations:

AIPM  Australian Institute of Project Management

APM  Association for Project Management

HRM  Human Resource Management

HR  Human Resource

HPWS high performance work system

ICB (IPMA) IPMA Competence Baseline, International Project Management Association

IT  Information Technology

KSA  Knowledges, Skills, Abilities

NGO  Non-Governmental Organizations

OECD  Organization for Economic Cooperation and Development

PM  Project Manager

PMBOK - Project Management Body of Knowledge (Project Management Institute)

PMCD Framework (PMI) Project Management Competency Development Framework (Project Management Institute)

PMP  Project Management Professional
1. Introduction
1.1. Projectification of work

Notion of ‘Projectification’ has been emerged over recent decades in major sectors of economics. It became clear that firms are being transformed in ‘project-based firms’ when majority of functions are performed through projects as well as administrative support is provided by ‘permanent structures’ (Packendorff & Lindgren, 2014). Similarly, Bredin & Söderlund (2011) following Hobday (2000) highlighted that variety of industries develop characteristics of Project-Based organizations.

Deloitte report (Schwartz et al., 2017) discusses new set of rules considering shifts of new known as ‘Fourth Industrial Evolution’ on the basis of more than 10,000 respondents. It is HR which need to help organization leaders to adapt technology, support people to embrace new models of career and help company adapt and facilitate changes in society or regulations (Schwartz et al., 2017, p.4). In the trend ‘Organization of the future-Arriving now’ it is discussed that for company day-to-day work to stay agile should be carried out in the ‘network of teams’: ‘High-performing companies today may build a “digital customer experience” group, select individuals for the team, and ask them to design and build a new product or service in a year or two.’ High-performance company ability to quickly form teams and disband it fast is critical (Schwartz et al., 2017). It is highlighted that structure of new type of an organization need to be project-based, where teams are focused on delivering products and services to customers (Schwartz et al., 2017, p.25). Further, in ‘Careers and learning - Real time, all the time’ trend, eighty-three percent in the survey reported on changing career to flexible mode which facilitates assignments, projects and learning from experience.

Challenges of technology development suggest change role of the leader from function lead to people who able to for and lead teams, support connecting and commitment as well as empower culture of growing, innovation and development. Those leaders need to be able to lead different workforce –internal employees, contractors, contingent (hired on demand) workforce (Schwartz et al., 2017). Leadership is to be developed with development assignments, real-life projects, development programs, mentorship and problem-solving activities (Schwartz et al., 2017, p.p. 77-83).

As it was highlighted during research by Deloitte based on studies from Oxford University and recruitment data base, ‘while tasks are being automated, the “essentially human” parts of work are becoming more important. Skills such as empathy, communication, persuasion, personal service, problem solving, and strategic decision making are more valuable than ever (Schwartz et al., 2017, p.120).

In addition, as it is stated in ‘Future of Jobs’ report (Schwab K., & Samans, R., 2016) one of high effect of automation and crowdsourcing of repetitive processes, increase of project based contracts will be increased. As Schwartz et al., (2017) suggested, future careers are consisting of projects and employee experience. That makes research on project-related subject contemporary and important.

1.2 Human Resource Management

Researchers conducted in terms of project management emphasized low degree of interest in Human Resource Management (HRM) integration in the project-based organizations
(Crawford et al., 2006). Bredin & Söderlund (2011) supports this view by observing that studies carried out directly on HRM in project-oriented organizations has been quite weak. Similarly, the current research regarding projects as temporary undertakings apart from being regular structures in the organizations from HRM perspective is extremely rare (Huemann, 2015). Although there is low but steady interest regarding the link HRM and Project-based Organizations, the implications stemming from project-based organizing for human resources are significant (Vicentini & Boccardelli, 2014), especially due to the changes regarding how organizations are restructured, and works is handled (Kenis et al., 2009). Besides, management through projects implies fairness, ethical and extremely motivational meanings from employment perspective (Turner et al., 2008). However, for most of the employees involved in projects working this way is simply part of their work life; moreover, HR functions in different manager roles was not studied in literature (Keegan et al., 2012). Therefore, considering the above-mentioned framework we set out to explore the main developments regarding the link between HRM and project based organizations.

1.3. IT Industry in France

According to the agreement of OECD member countries (Organization for Economic Cooperation and Development) in 1998 ICT is defined as ‘combination of manufacturing and services industries that capture, transmit and display data and information electronically’ (OECD, 2002, p. 81). Overall, the value of French ICT market is about 67 billion EUR, with the share in IT services segment being about 78% (Atradius, 2017). Similarly, according to the U.S. Department of Commerce (2017), France’s market value for IT (software and services) is gradually growing reaching €52.1 billion in 2016. This market is divided into three areas: 1) Services and Consulting (61%), Software (22%) and Technology Consulting Services (17%). In 2017 the market in France is predicted to grow with rate of 3% due to IT services being main driver (Atradius, 2017). In addition, According to European Commission (2017) France is the third largest in added value of ICT industry in Europe (€87 billion in 2014 accounting 15 % Germany (€121 billion or 20 %), the United Kingdom (€105 billion or 18 %).

Since large number of projects in IT industry fails, more and more attention is attached by researchers on different aspects of Project Management in IT industry, such as project organization, skills and competences as well as project challenges (Conforto et al., 2016; Starkweather et al., 2010; Brady, Davies & Nightingale, 2012). Thus, the research is focused in IT Industry, specifically in France.

1.4. Research question and objectives

There is still limited up-to-date research in project-based organizations, specifically in individual and team level. The research we are undertaking aims to address the following question:

‘How human resource practices contribute to Project Manager’s/Team Member’s skills and competences in the IT Industry?’

Research objectives were set:
1. Develop an up-to-date understanding what competences of Project Managers and team members are in IT Industry.
2. Explore what HR practices used in IT Industry on a project level.
3. Explore the role of context and challenges specific to the IT industry.
4. Identify the competences support systems used in IT industry.

It should be noted that the above question was explored from the perspectives of both Project Manager and Project Team Member.

1.5. Structure of the study

The Section 1, the introduction provides background and context of the study with the need of the research being discussed.

Section 2, Literature review, delivers the theoretical framework. Firstly, general overview about Human Resource management in organizations is introduced as well as main definitions and trends of HRM in organization are given. Further, Thorough discussion of Project Management Skills and Competences are delivered trying to highlight main competences in different industries (Construction, IT). Further, considering uncertain and complex nature of projects theory about uncertainty, complexity and ambiguity is introduced. Considering development of information technology, support systems and technology are discussed as potential influence. Later, previous research of Human Resource Management in Project-Based environment depicts main up-to date research in the area. The section summarizes theoretical framework in graphical form as the initial theoretical concept for the research.

Section 3 delivers Research Methodology, where Research Philosophy, Research approach are discussed.

Section 4 discusses research design and highlights validity of research and depicts ethical considerations.

Section 5, Empirical data Analysis, discusses data analysis results according main themes and categories identified by thematic analysis.

Section 6, Discussion, highlights main findings and compares them to the literature framework discussed in previous sections.

Section 7, Conclusions, reviews findings with the respect to the Research Question and Objectives. Further, theoretical limitations, theoretical and managerial implications are introduced.
2. Literature review
2.1. HR Practices and Organizational Performance

Human Resource Strategy is defined as ‘the intentions of the corporation both explicit and covert, towards the management of its employees, expressed through philosophies, policies and practices.’ (Tyson, 1995, pp. 35-43). There are three approaches for strategic HRM. Under Universalist approach human resource management is understood as ‘best practice’ which does not depend on firm’s competitive strategy – it is assumed that specific set of human resource practices would produce high organization performance (Torrington et al., 2011, p.p. 71-72). Those HR practices typically are recruitment, selection, training, development, performance management, job design, participation and employee voice, career management, flexible working and employment security (Clinton & Guest, 2013). Fit or contingency approach is based on two extreme variations of fit: HR external fit (vertical integration) means alignment of HR with business strategy.

Second form (horizontal integration) consider all practices working together as a coherent whole. For example, selection, performance, appraisal, rewards and training using that model may be utilized altogether fitting organizational strategy. Third approach (resource based view) considers that competitive advantage is achieved by development of human capita meeting for criteria (Wright et al., 1994): Valuable, Rare, Inimitable and non-substitutable. That approach focuses on people in organization: attention is paid on evaluation and monitoring of their contribution (Torrington et al., 2011, p.p. 71-72).

Wright & Boswell (2002) developed the typology of Human Research Management research considering level of analysis (individual/group or organization) and number of practices (single/multiple), which is presented in the Figure 1. Authors suggested to use term ‘macro’ HRM as broad term focusing on organization whereas ‘micro HRM’ is discussed to explore how HRM practices affect individuals. There are studies when single practices are studied at ‘micro level’ as well as multiple HR practices which works as system (‘high performance work system’, HPWS, following Huselid, 1995). Previous HRM research was reviewed in frame of that typology which combined those two dimensions (Figure 1).

![Figure 1: A typology of HRM research. Source: Wright & Boswell (2002, p.250).](image-url)
Practices including selection, recruitment, training and development, compensation, performance management, and participation/work design as functional HRM in the individual level were discussed. In addition, number of publications reviewed discussing multiple practices (or systems) also affecting in individual level. Further, macro-research was reviewed considering number or single practices in organizational level demonstrating impact of HRM into organizational performance. It was suggested that it would be beneficial to integrate parallel research in macro and micro level to enrich influence of HRM into organizational performance (Wright & Boswell, 2002).

Chowhan (2016) following research studies starting from Huselid (1995), discussed that strategic HR research which focused on high-performance work systems (HPWS) considers HRM practices acts as system, not as isolated ones. Skill-enhancing, motivation-enhancing and opportunity-enhancing bundles of practices are discussed to relate to innovation and organizational performance. The skill-enhancing bundle includes practices relevant to selection, recruitment and training. Motivational-enhancement bundle is referred to direct compensation, promotional opportunities and benefits. Opportunity-enhancing bundle includes work practices, grievance and autonomy (Chowhan, 2016). It’s argued that knowledges, skills and abilities in organization is a result of manager’s decisions during recruitment and selection.

2.2. Project Managers competences and skills

Woodruffe (1991) suggested to use term competence as a job-related and/or person-related way (competency) (Stevenson & Starkweather, 2010). The former is about overall ability to perform a job with competency; the latter regards as ‘one of the sets of behavior that the person must display in order to perform the tasks and functions of a job with competence. Each competency is a discrete dimension of behavior. Furthermore, it is a dimension of behavior that is relevant to performance in the job’.

Competency model (attribute based competency approach) was developed in the US starting from book of McCelland and McBer and reported by Boyatzis in the 1980s. Competency Standards – performance approach was utilized in national qualifications in UK, Australia, New Zealand and South Africa (Crawford, 2005).

Mirabile (1997) also provides detailed description of competency modeling. Competency is defined as ‘a knowledge, skill, ability, or characteristic associated with high performance on a job, such as problem solving, analytical thinking, or leadership ....’ Criticality is suggested as measure of importance of particular competence. Notion of competence measurement was suggested by David McCleland (Harvard). Number of instruments may be employed for competency modeling – job analysis interviews, focus groups, questionnaires, competency model formats. Those models are step to develop job profile against which candidate’s level of competences is ranked. Different types of competency models may be used depending on an objective. Cluster-type competency model for leadership highlights behavioral characteristics under general categories without level of proficiency. Other model for technical job may include technical competence and performance behaviors under different scales of proficiency. Another type of model is when competence is represented by simple definition and different levels of proficiency are described by behavioral anchors (Mirabile, 1997).
The framework comprising competency model (attribute) and standard (performance) was developed by Crafword (2005). Input competences are knowledges and skills, personal competences are core personal characteristics and output competences are demonstrated or inferred by using in practice according professional or organizational standards. It was found that there is no statistically significant relationship between performance standards and perceived performance of project manager by supervisor. Knowledge aspect of competences from the framework is recognized in standards IPMA and PMBOK. Performance Based Competency standards, for example, Australian National Competency Standard for Project Management and developed in the UK National Vocational Qualification (NVQ) framework measure demonstrable performance.

‘Worker-oriented’ approach to competence was looked as knowledge, skill and abilities (KSA) as well as personal traits. Attributes are rated for quantitative assessment. Further, researchers paid attention of personal attributes "an underlying characteristic of a person in that it may be a motive, trait, skill, aspect of one's self-image or social role, or a body of knowledge he or she uses’ (Boyatzis, 1982, cited by Sandberg, 2000). However, this approach was criticized for providing too generic descriptions so with lack of value for competence development. In ‘work-related’ approach, firstly, activities for work are identified and then those are transformed to personal attributes providing more detailed descriptions of elements. Multimethod –oriented approach utilizes both work- and worker-oriented. It is argued that all rationalistic approaches are attribute-based (Sandberg, 2000). However, Delamare & Winterton (2005) discussed that McClelland characterized characteristics of superior performance as competency; further that approach was followed by Boyatzis (1982) who studied 2,000 managers in 12 organizations. It is argued that behavioral competency approach is still exists in US, recent reviewed literature becoming based on functional-job related standards. UK-developed standards are being functional (key occupational roles are divided into units of competence which in turn sub-divided into elements of competence which may be assessed by performance criteria and range indicators). Concept of Competence as argued is being broadened by adding knowledge and behaviors. More holistic approach is adopted in France, Germany and Austria. It is found that standards are becoming to converge into multi-dimensional approach. Multidimensional typology of competence was developed to competence – functional, social, cognitive and meta-competence. It is argued that there is need to make common ground considering difference between rationalistic approaches and interpretive which is becoming popular for HRM academicians (Delamare & Winterton, 2005). Cheng et al., (2005) argued, that the approach developed in US is to search behavior or characteristics of ‘superior’ performers distinguishing them from ‘average’ ones. Alternative approach was in UK which is functional criteria to rank managers in tasks (Cheng et al., 2005).

Sandberg (2000) developed ‘phenomenography’ approach as alternative to rationalistic approach (attributes) which was developed in Swedish Automotive industry firm. It is argued that meaning of work in experience defines structure of competence suggesting notion of ‘work conception’ as starting point. It was analysed what engine optimizers conceived (experienced or made sense) of the work and how they did it. Different levels of attributes were found - each conception has specific structure of attributes of competence - competences consist of those conceptions. It is argued that structure of worker’s conception of work defines competence (Sandberg, 2000).
El-Sabaa (2001) studied career of project managers compared to career of functional managers utilizing 3 stage-framework. Skills group were defined and analysed onto human, conceptual and organizational as well as technical categories. Whereas technical skills were found to be least important for Project Managers, human skill was of highest importance, irrespective of industry whereas for functional managers knowledge-based technical specialty, efficiency and accuracy were reported as most important. It was also demonstrated that it is important for project managers to have diverse cross-functional experience.

Partington et al., (2005) discussed that approaches in PMI or APM (UK) are examples of work-oriented competency approach (work activity is starting point) providing knowledges, work activities and KPI, however worker’s attributes required to perform job are lacking. From the other hand, workers-oriented standards are those conducted by Boyatzis (1982), Spencer and Spencer (1993), Crawford (2005) who were looking into attributes (knowledge, skills and abilities) of superior workers however: that approach is criticized to be too generic. It’s argued that standard does not provide hierarchical framework for competency development. Phenomenographical approach was applied to study program manager’s competencies from different industries in the UK both on ‘what’ and ‘how’ descriptions resulting in 17 characteristics on 4 hierarchy levels of mastery being suggested (Partington et al., 2005). Morris et al., (2006) also argued project that management (formal) knowledges need to be distinguished from behavior and ‘doing right things properly’ as well as from project performance. Unforeseen events or third parties may fail project even though appropriate knowledges were utilized. It is argued that tacit knowledges, skills and behavior (as competency), judgement are also important for effective project management.

Behavioral competences of construction project managers were studied by Dainty et al., (2005) on the basis of McBer competence assessment methodology to identify superior performance. Competency role consist of job-task competencies and behavioral competences. sample of ‘average’ and ‘superior’ project managers in construction industry was identified by using Behavioral Event Interview (what is actually done by superior performers) and McBer Competency Dictionary (Cheng et al., 2005). It is argued that project performance-based indicators are not able to support individual assessment (Cheng et al., 2005). Following original factor analysis, twelve competences were identified: achievement orientation, initiative, information seeking, focus on client’s needs, impact and influence, directiveness, teamwork and cooperation, team leadership, analytical thinking, conceptual thinking, self-control, and flexibility. Further, performance criteria were redefined into 43 items grouped in 9 factors: Team building, Leadership and Flexibility, decision-making including number of indicators, mutuality and approachability, honesty and integrity, communication, learning and understanding situation and applying, self-efficacy, external relations. Findings were that ‘self-control’ and ‘team leadership’ being most predictive behaviors of PM performance. Those behavioral competences leading to distinguish best performers were compared from studies from other industries (Cheng et al., 2005). Authors argue, that the framework of the model is useful in HRM practices such as recruitment, training, promotion, rewards, succession planning assuming HRM is practices inside organization (Dainty et al., 2005). Even job-task competences are very specific to the industry they work, behavioral competences of top-performers are relevant to other industries (Cheng et al., 2005).
Dvir et al., (2006) explored relationships between project type according four dimensions (novelty, technological uncertainty, complexity and pace), project management personality traits and project success from different perspectives on the basis of person-organization fit theory. Personality types were evaluated using ‘The Five Factor Model of Personality’ addressing novelty, Type A behavior pattern considering pace, risk-taken tendency corresponding to uncertainty, Jung’s typology (scored as intuition, perceiving and introversion) and Holland’s personality type (scored as investigative and enterprising) reflecting complexity. It was revealed that for three different types of project (derivative, platform and High-Tech), there are different patterns of correlations between certain personality traits and specific project success criteria suggesting that it is valuable connection between personality psychology and project management. This point of allocation of project type to personality type was further explored in program management (Miterev et al., 2016), who based on Pellegrinelli’s (1997) program framework by exploratory studies of 10 program managers found distinctive competence profiles for several types of programs: ‘coordinator’ profile suite for portfolio-like programs, the ‘commander’ is suitable for ‘goal-oriented’ programs and the ‘convincer’ is good for heartbeat programs.

Ahadzie (2008) distinguished contextual performance behaviors from task performance behaviours. Task behaviors are relevant to technical function (role-specific, aligned with functions such as organizing, programming, planning, coordinating and controlling which as argued close to input/output competencies from the Crawford (2005) model) whereas contextual behaviours are those which are not defined by role (personal from Crawford (2005) model. The framework was used for identification and development of construction PM competencies profile from Ghana using positivist research methodology. Contextual performance behaviours were identified as 15 variables comprising two groups: job dedication and interpersonal facilitation whereas task performance behaviors were identified as cognitive ability, job knowledge, task proficiency and experience.

Anantatmula (2010) summarized findings of People-Related Factors affecting project performance identified from literature in the following order of priority: 1. Define roles and responsibilities; 2. Communicate expectations; 3. Create clarity in communication; 4. Establish trust; 5. Employ consistent processes; 6. Facilitate support; 7. Manage outcomes. Project management model and Interpretive Structural Modeling (ISM) showed that first two factors are considered as independent factors, so processes and roles definition is the first and foremost step of leading and managing projects. Authors argue that the crucial role of project manager is to establish trust and managing outcomes. Further Ahmed & Anantatmula (2017) found statistically significant correlation between leadership competences (expressed as first five factors mentioned in previous findings) and project performance (in terms of schedule, cost, quality and stakeholder satisfaction).

Further, Starkweather et al., (2011) studying relationship between PMP certification and core competency in IT industry found that PMP certification was the least valuable of 15 core competences identified by recruiters from IT executives’ viewpoint. Core competences of Project managers were identified in reducing order of importance from the IT executives’ point of view: More than 80 per cent of importance are Leadership, Ability to communicate at multiple levels, Verbal skills, Written skills, Attitude and Ability to deal with ambiguity and change. Work history, Experience, Ability to escalate, Cultural fit are those qualities found important for more than 50%. Rest of competences are Technical expertise, Education, Length of prior engagements, Past team size, PMP®
certification. It was also shown that there was not statistical difference of PMP certified and not certified PM in terms of meeting costs, schedule, technical and business requirements and client/user satisfaction; however, PMP certified PM were perceived more successful in quality/meet technical specifications dimension. Both IT recruiters and executives highlighted the importance of soft skills (ability to communicate at multiple levels) and tacit knowledges when and how to utilize leadership in project success. Moreover, application of knowledges in project management training is important since the gap between explicit (textbook) and tacit (experience) was noted by both IT recruiters and executives. Authors argued that certification need to be complemented by assessment of communication and decision-making abilities for screening and training purposes. PMBOK consists of Project Management Process Groups (Initiating, Planning, Executing, Monitoring and Controlling, and Closing) and nine Knowledge Areas (Project Integration, Scope, Time, Cost, Quality, Risk, Procurement, Communications, and Human Resources (Starkweather et al., 2010). Stevenson & Starkweather (2010) highlighted six critical core competences: leadership, ability to communicate at multiple levels, verbal and written skills, attitude and the ability to deal with ambiguity and change. Clarke (2010) also studied project management development competences in four groups (referring PMI framework, 2008): communication (four competences), teamwork (7), attentiveness (5) and managing conflict (8). On the basis of 67 project managers from the UK it was found that emotional intelligence (citing Mayer and Salovey’s ability model of emotional intelligence, 1997) and empathy has relation to those competences which may suggest that organizations may develop emotional intelligence abilities.

Ahsan (2013) discussed that the role of project manager is evolving from the administrator to managerial and leadership position. There are many conceptualizations of competences exist, number of those includes knowledge, skills and abilities. Taking as base model PMCD (PMI) framework – knowledges, performance and personal competences, those were divided into knowledge, skills and abilities. Further, 60 key variables were identified from existing literature – and compared same from job boards in Australia and New Zeeland for different industries. Content analysis of literature provided following list of KSA (first 15 of 60) - 1. Leadership. 2. Effective communication 3. Project technical expertise. 4. Team building and management 5. Planning skill 6. Flexibility 7. Organizational skill 8. Decision-making skill 9. Management skill 10. Delegation. 11. Analytical abilities 12. Problem solver 13. Coping with situations. 14. Interpersonal skills. 15. Stakeholder management. However, job posts analysis performed showed that there is discrepancy across industries considering the list in following order: Communication, Technical skills, Stakeholder management, Cost management, Time management, Educational background, Planning, Leadership, Team build and management, Certification. Considering the difference of KSA patterns sought key different industries and authors argue that competences framework of PMCD (PMI) may be further developed considering different countries and industries. For example, for ICT industry first five skills in reducing order of importance are Technical Skills, Communication, Stakeholder Management, Certification and Time Management. It is also discussed that reliable competences evaluation which may be assessed by job analysis is way to recruit competent staff which leads to successful project management.

Fisher (2011) by face-to-face interviews with project managers from industries such as Telecommunications, Engineering, Consultancy and Banking and focus groups revealed following six skills for effective people project manager: Understanding behavioral
characteristics, Leading others, Influencing others, Authentizotic behavior, Conflict management, Cultural awareness. Those are described by associate behaviors and rankings of importance. It’s argued that this significant improvement of those skills needed to improve success of projects.

Exploratory study of Project Manager’s competences particularly to NGOs (Brière et al., 2015) in the literature review of PM competences found that mainly competences are divided in three categories: 1) organizational and management (with Planning and organizing, strong problem orientation and delivering result being most citied), 2) project management or technical competencies (project knowledge being most citied) and 3) human skills, soft skills or behavioral competencies (Communication, Leadership, Motivation, Negotiation, Creativity, Ethics, Managing group process and team building). It was argued that local and cultural contexts and environment are important to build competences.

Takey & de Carvalho (2015) adopted definition of competence from previous literature as “ability to mobilize, integrate and transfer knowledge, skills and resources to reach or surpass the configured performance in work assignments, adding economic and social value to the organization and the individual”, discussing that it is not enough to have skills and knowledges but those need to be applied into valuable outcomes. Competence Baseline — ICB (IPMA, 2006) includes technical, behavioral and contextual competencies. PMI describes knowledges (from PMBOK), performance and personal competences which are formed by elements of competences. Each element of competence has performance criteria and evidence. Australian Institute of Project Management (AIPM, 2008) defines eight units of performance competences in three levels: Project Practitioner, Manager and Director. PMI and AIPM identify performance category, in contrast, IPMA defines only contextual. Authors merged different competences into four categories of competencies: project management, personal, technical, context and business processes by constricting diagram of affinities (Takey & de Carvalho, 2015).

Savelsbergh et al., (2016) studied 31 project managers in UK and Netherlands, suggesting that managers learn informally on-the-job. Since learning and development of project managers is dependent on context effective practices may be utilized since self-reflection and reflection from others provides lesson learned which in turn would assist in self-development, achievement of development objectives and facilitate individual and collective learning. Per existing theory, for example (Crawford, 2005) three competences of project managers are essential – input (knowledges and skills people bring to job), personal (personality characteristics) and output performance). Authors suggest that in project based organizations HR managers may facilitate learning of PM communicating with line managers by balancing proven skills and training objectives. It was also found that project managers from the first experience gain ‘insight in practice’ and ‘self-insight’, at further stages ‘self-efficacy’, ‘more people oriented’ and ‘broader view of the role’ are coming further in their careers.

Tabassi et al., (2016) assessed leadership competences as constructs - intellectual, managerial competences and transformational leadership qualities. Those are composed of 10 elements which, as result of the study of 70 project managers, influence project success in sustainable construction projects in Malaysia.
Lloyd-Walker (2016) on the basis of studied Australian Project managers suggested that in alignment with social cognitive career theory (SCCT, Lent et al., 2002) it is important for project managers to have ability to deal with project management circumstances utilizing personal learning, networking and negotiation. Those who enter and continue development in project-based roles have high level of self-efficacy and coping efficacy to deal with uncertainty which is characteristics of projects. Self-efficacy and coping efficacy need to be taken into account and supported by project based organizations during section, assignment, development and retention for project-based roles. Authors argue that project management associations (for example, PMI) supports professional development, networking and career advertisement. It is also found from the literature that contract employment is increased; project management professionals may pursue series of contract (temporary) roles building their career profile, which is indeed challenging.

2.3. Environment, uncertainty and complexity

Rethinking project management project includes studies of uncertainty and complexity as one of major division of inductive analysis. Few trends of project environment, changing complexity and uncertainty were addressed (Svejvig & Andersen, 2015). The attempt to provide systematic framework of complexity within the risk management domain which includes behavioural component was developed by project practitioners who were involved in London Terminal 5 project which were utilized during Risk Management Workshops (Hancock & Holt, 2003). They argued that risk problems need to be identified in frame of behavioural complexity (number of stakeholders) and systems complexity (number of systems) revealing ‘tame’, ‘messes’, ‘wicked’ problems and ‘wicked messes’, following concepts introduced by Roth & Senge (1996). Different categories so would require different problem-solving strategies. ‘Wicked mess’ (characterized by high behavioural complexity and high dynamic complexity) would require suboptimal solution. That would make important in ‘wicked mess’ zone: facilitated communications supporting understanding problems and limits of solutions, ‘no-blame’ culture and accurate reporting. At high level of behavioural complexity social-science type solutions would become quite optimal (Hancock, 2004).

Further, Bakhshi, Ireland & Gorod, (2016) reviewed 420 published papers to clarify ‘Complexity’ term. Seven complexity dimensions were identified on the basis of 125 factors from different viewpoints – Project Management Institute (PMI), Systems and Complexity: Context, Belonging, Autonomy, Connectivity, Emergence (incorporating uncertainty metrics), Diversity, Size. Different project leadership in terms of Snowden’s Leadership framework (Snowden & Boone, 2007) are has different complexity constructs. This review also elaborated project systematics from Shenhar et al., (2001) which includes ‘Low’, ‘Medium’, ‘High’ and ‘Super High-Tech’ technology uncertainty projects. As it proposed by Shenhar et al., (2001) Computers (‘New systems in fast moving industry’ are in ‘High-Tech’ technological uncertainty domain. Further, the ‘Diamond Framework’ was developed to classify projects in terms of ‘Novelty’, ‘Technology’, ‘Complexity’ and ‘Pace’. ‘Novelty’ is understood how new are projects in a market. ‘Complexity’ involves hierarchical organization of systems and subsystems which is connected to system scope and way to arrange project organization and project management. ‘Pace’ is time criticality which influences on a project organization. Each of categories included subdivisions. This adaptive framework identifies project management strategy. However, each organization may have different kinds of
uncertainty (Shenhar, Dvir, 2007, p.p. 46-54). Snowden & Boone (2009) consider leadership behaviour in different environments suggesting that different types of environment require different patterns of leadership behaviour. ‘Ordered’ and ‘Simple’ contexts assume that cause-effect exists, and everything is known by facts. ‘Complex’ and ‘Chaotic’ doesn’t have any relationship and emergency comes to play.

Padalkar & Gopinath (2016) provided taxonomical examination of uncertainty and complexity terminology in project management. The conclusion authors found that the difference between terminology used by scholars as intermingling terms is more depend on different terms is more because different ontological and epistemological viewpoints rather than constructs itself.

He et al., (2015) based on the research of Geraldi, Maylor and Williams (2012) and Remington & Pollack (2007) measured complexity using fuzzy analytic framework conceptualised in 6 categories (Technological, Organizational, Goal, Environmental, Cultural, Information). This model was used for Shanghai Expo megaproject, which was implemented as program by different strategies in different projects. As a result, project was completed earlier within the budget.

Zhu & Mostafavi (2017) proposed Complexity and Emergent Property Congruence (CEPC) assessing project performance considering congruence between emergent properties and project complexity. Project execution plan is suggested to be executed when those are congruent otherwise alternative planning strategies should be delivered.

Maylor & Turner (2017) on the basis of ‘lived’ experience of managers during number of workshops defined perceived Structural, Socio-Political and Emergent Complexities. The idea suggested in paper was to provide instruments how to identify, response and reduce complexity.

Atkinson et al., (2006) following Thiry (2002) distinguished ambiguity and uncertainty. Uncertainty reflects having and required data – ‘lack of information’ whereas ambiguity stands for multiple and conflicting interpretations or confusion. Depending on type of project which further considered by degree of ‘softness’ or ‘hardness’ different strategies may be applied; authors argued that balancing of trust and control is needed. Thiry (2002) also argued that ‘ambiguity reduction’ process needs to be done before trying to reduce uncertainty.

Brady, Davies & Nightingale, (2012) revised Klein & Meckling ‘Application of Operations Research to Development Decisions’ highlighted the importance of trying-testing in the projects at the high uncertainty situations; projects are considered as paradox of formal methods and ‘messy unpredictable reality’. However, trial and error methods, are in contrasts with rational tool and methods. Experimentation and predictability were further suggested within the infrastructure programs, under conditions of high uncertainty such as presented as experience from Heathrow Terminal 5, Manhattan Project, Atlas and Polaris methods with trial and error, and parallel trials cited by Lenfle & Loch,(2010) which are reinforced by Ott, Eisenhardt & Bingham (2017) with bottom-up ‘strategizing by doing ’ as well as by ‘trial and error’. Those methods in addition with ‘Bricolage’ and ‘improvisations’ as learning process as action (by doing) helps managers to learn from their experience.
Ramasesh & Browning (2014) developed conceptual framework of projects with high uncertainties utilizing multidisciplinary theories, case studies as well as experience, which is suggested to be used for (‘hyper-competition and high velocity environments). It’s argued that ‘known unknowns’ are those Uncertainties which may be identified by Risk Analysis. ‘Unknown Unknowns’ are those which Project Manager is not aware, however these may be divided into ‘knowable unknowns’ and ‘Unknowable unknows’. Occurrence of ‘unknown unknowns’ depends on complexity (element and relationship complexity), complicatedness (cognitive complexity), dynamism, equivocality, mindlessness and project pathologies. Four factors: entrapped mindsets, pathological intensity, missing weak signals, and/or wilful ignorance which lead to probability of ‘unknown unknowns’ define ‘mindlessness’. Böhle, Heidling & Schoper, (2016) introduced term ‘dual uncertainty’ because of occurrence and process of unexpected events. It is argued that unexpected events are not possible to amend or manage by ‘plan-oriented action’.

Laufer et al., (2015) discuss how successful project managers cope with challenge of different unexpected events. Three consistent approaches were utilized including 1) field studies, interviews and observations 2) reflective dialogues with project practitioners 3) real life testing. Four-role framework was developed and tested: Intention driven: ‘Develop collaboration’, ‘Integrate planning and review with learning’; events driven: ‘Prevent major disruptions’, ‘Maintain forward Momentum’. Findings are that managers combine traditional and ‘agile’ methods for ‘leading complex projects’ to make them more flexible and improve project performance. Uncertainty is addressed by combined short-term and long-term planning: whereas short term plans are rigid, longer term plans are more flexible. Learning process is facilitated by project reviews. It is suggested that framework of roles combined traditional and agile practices is aligned with Henry Mintzberg’s view of manager being ‘people oriented’, ‘information-oriented’ and ‘action-oriented’ altogether. However, even though the framework discusses the activities there is no link with what skills and competences are needed? The role of HRM is also not discussed.

Svejvig & Andersen (2015) reviewed publications in UK-started Rethinking Project Management with shifting ‘metaphor’ from ‘the project as a tool’ to ‘the project as a temporary organization’, suggesting that project management research not yet empirical enough, citing (Packendorff, 1995). Authors reinforced a need for more practice-based research from the viewpoint ‘project-as-practice’ (Blomquist et al., 2010) arguing that in practice perspective stands on what actually happening in projects which will be base for new models and concepts. From that point of view, those models developed by Lenfle & Loch (2010) referring ‘lost roots’ of Project management, Laufer et al., (2015), Hancock & Holt, (2003), Hancock (2010) are good examples for understanding what actually happened in projects and what models and theories were developed from a project experience.

2.4. Technology and support systems

Mohammadi (2014) developed hybrid Quality Function Deployment (QFD) and Cybernetic Analytic Network Process (CANP) model to select a project manager per owners’ criteria –first model translates owners’ expectations into criteria (18 for case study were identified) and second one identifies weights, prioritizes and ranks candidates.
Varajão & Cruz-Cunha suggested the tool combining AHP (Analytic Hierarchy Process) and ICB (IPMA Competence Baseline, ICB 3.0, which defines contextual, behavioral and technical competence elements) to select most appropriate Project Managers for projects on the basis of multiple criteria as systematic and comprehensive process.

Loufrani-Fedida & Missionier (2015) studied competences of Project managers in multilevel approach using four case studies in project-based firms (IBM, Hewlett-Packard, Arkopharma and Temex). It was noticed that two communication media were used to integrate individual competences – 1) ICT such as e-mail or videoconference and 2) personal discussions. It was found that personal meetings were in favour since these allowed progress review, solved issues, facilitated discussions and supported keeping a team informed of another team’s activity. In another publication, Loufrani-Fedida & Saglietto (2016) discussed ‘project documentation and computer storage’ micropractices in theme ‘Knowledge codification’ on collective and organizational level as element of organizational knowledge-management dimension of project management competences in project-based organization.

2.5. Research of HR Practices in Project-Based Environment

The major objective of the study conducted by Medina & Medina (2014) was to develop the understanding concerning the involvement of project managers in competence management or set of HR practices for project based organization where knowledges, capabilities and resources are accumulated through execution of major projects taken sample of 63 respondents from Swedish small or mid-size firms. These practices include selection, performance appraisal, training and development and internal rotation. The authors of this article claim that these kinds of practices influence on the competence management objectives of the project-based companies as a whole, not only at single project level. Also, they argue that focusing on the individual project level would lead the impact of practices in other projects associated to the pilot project to be overlooked during the lifetime of this project. With the increased degree of involvement of Project Manager in HRM practices the better long-term competence goals of organization will be developed (competence utilization, competence planning and career development).

Another study initiated by Dainty et al., (2009) emphasizes the importance of employee resourcing as main Strategic HR management function. They focus on the resourcing practices through different HRM methods such as planning, selection and recruitment, team development, career and performance management but also employee data collection including its storage and use. These processes go beyond organizational level and link permanent projects with networked projects. Strategic Human Resource activities were analysed in 7 large UK Construction firms leading to synthesis of best practices into the framework of following HRM activities: Human Resource Planning including succession planning and promotional opportunities for graduates, Recruitment and Selection, Exit (exit procedure), Team deployment, Performance Management including career management and training needs as well as HR administration. Authors argued that by the resulting framework an innovative approach to resourcing is developed balancing organizational, project and employee requirements. Team deployment includes various activities of selecting employees for projects by line managers, HR staff or functional managers. For example, in one company knowledge-based approach to team deployment was developed by using information from potential team members: technical competence reports, personal development assessments, personal relationship and
availability data. Performance management, training and development as well as career management are suggested to be interconnected into deployment decision process as per the framework of capturing consistent knowledge database about individual needs, requirements and preferences.

Likewise, Bredin & Söderlund (2013) discuss in their work single HR practices and the supra project organizational level through career development process. Even though career development proves of high importance to individuals their study put focus on organizational level trying to move from individual career path to permanent organization level. Moreover, this study defines steps and requirements from career point of view to ensure that project managers remain in the organization. Two archetypes of career models of Project managers were revealed: the competence strategy model and the talent management model. Career model, which was understood as formalized model of advancement over career path per study included formal competence, experience and leadership requirements at different career level.

Similarly, Hölzle (2010) aims to define the main success factors for HRM in order to establish lasting career path for project managers. In order to retain and establish project personnel, companies should guarantee continuity to the project managers via recognition and equivalent career route given the temporary character of projects.

Melkonian & Picq (2011) discussed that there are two types of project organizations – project-based enterprises (or temporary organizations) which rely on outsourced team and project-based firms which activities are in projects however structure and process is function-based. Multi-level dynamic project capability model is introduced. Those are demonstrated as two-side dynamic on the basis of French Special Force: ‘Top-down, corporate to project, through HRM policies and practices to select and prepare individual and groups able to work in projects, with sophisticated “plug and play” protocols to build shared cognitive scenarios for action. Bottom-up, projects to corporate, through feedback and learning loops to constantly adapt and improve the HR policies, project leadership skills and continuously re-adjust individual development plans, both in terms of competences and psychological support.’. The model of project capabilities also provided insights of HRM practices enhancing motivation and learning from missions.

Study conducted by Ballesteros-Pérez et al., (2012) examines human allocation management in different projects by means of sociometrical techniques and tries to connect a particular HR practice with outcomes at organizational level of project-driven companies.

Ekrot et al., (2016) develops ‘Project Management Competence Retention Model’ which recommends long-term HRM plan including knowledge management based on various ‘lessons learned’ processes. They found out that long-term development plan has positive influence on the retention of project managers’ competences and ultimately positively impacts on project success. They claim that retention of highly-qualified project managers is one of the key success factors for a business. Perspectives of development in organization for Project Managers, knowledge management system facilitate retention of competences in project-based organization which relates to average project success and eventually business success of project-based organization. Project managers on organizations mostly increase their knowledge through projects and consequently learning process happens outside the formal process which is usually designed by HRM
in traditional organizations (Savelsbergh et al., 2016). HRM needs to be conceptualized in project-oriented organizations and applied as set of practices as argued Popaitoon & Siengthai (2014). Their research focus on different practices of HRM such as ‘training, reward, career development, participation as well as project team autonomy’ from ‘knowledge absorptive capacity’ and project success perspective. Yun et al., (2016) also highlights the importance of conceptualizing human resource management on projects and stresses that several HR practices such as correct staffing of teams, right training and increasing the capability of the people involved in the training has extremely positive impact on performance in project-based organizations. By using more in-depth research Khan & Rasheed (2015) provides more accurate conceptualization as to how HR practices may impact project success at organizational level. For instance, they study the effect of broader HR practices including Performance Appraisals, Training and Development, Recruitment, Selection as well as Compensation System on project success considering moderating influence of Islamic Work Ethic. Another research conducted by Zwikał & Unger-Aviram (2010) considers project team development as one of HR practices on project managers’ performance. They focused attention on increased influence of team development practices for longer projects (mentioning HRM process as development of human resource plan, acquire project team, develop project team and manage project team following PMBOK, PMI, 2008). The authors started from the claim that there is contradictory research results that, from one point of view HRM is important factor for project success however the effect is limited, it was not found in literature that HRM and ‘team development practices’ affect project performance and project success, which may be reason of not enough role of HRM practices in projects. Project teams are generally cross-functional, which, as previous research suggested, may have both positive and negative outcomes. Authors evaluated how effort on team development effects on project success and if duration of project influences that relationship. Using 99 projects conducted in Israel it appeared that team development did not contributed to project success, however in projects more than year ‘pay and reward’ and ‘coodination’ practices influence project success. Authors refer PMBOK (PMI, 2008), for those team development instruments: ‘interpersonal skills, training, team building activities, ground rules, co-location, and recognition and rewards’.

Other studies drawing on the HR practices implications in project-based organizations include deeper scientific approaches regarding HR planning and decision-making models for human resources assignment to projects ( e Silva & Costa., 2013). They examine the importance of Project team development as project success factor from ‘efficient management of employee’ perspective. Moreover, role understanding in the project management domain proves to be crucial (Konstantinou, 2015).

Researchers examine also the link between multiple HR practices and impact at individual level. The article written by Zika-Viktorsson et al., (2006) addresses the negative influence of managerial aspects on individual project members especially due to project overload on individual project employees. Also, Asquin et al., (2010) tries to find out whether project-based environment has negative effect on individuals? This study points out the negative impact of project based working due to temporary character of projects and at the end of the projects since the managers become extremely vulnerable in terms of career trajectories as well as difficulties related to obtain recognition for the competences gained through projects proves being cause of distress. Similar issues inherent to project definition on project managers’ well-being have also been mentioned by Turner et al., (2008). Few researchers such as Bredin & Söderlund (2011) discuss the
importance in terms of interaction between HR, line managers and project managers to shape the positive outcome for project based organizations. For example, Huemann (2010) on the basis of case-study of Telecommunication Company over 12 years found that project-oriented company HRM need to become ‘proactive business partner’ changing from merely administrative function to support project-oriented company, for example, in terms of training and career development.

Burke & Morley (2016) following Bredin & Söderlund (2006) argued that human resource management challenged by shift of career development from single firm career development to successive temporary organizations. In addition, for project based firm, HRM need to address ‘adaptation, integration, and reconfiguration of internal and external organizational competences to match the changing environment.’ (Söderlund & Bredin, 2006).

Loufrani-Fedida & Saglietto (2016) develop model to connect project management competence mechanisms (knowledge management, human resource management and strategy) on three levels (individual, collective and organizational), however, only few HRM practices were considered: ‘Professional certification’, ‘Job rotation’, ‘Identification of technical experts’ and ‘Competence reference list’. ‘Collective competence’ is defined as ‘a group's ability to perform together towards a common goal, which results in the creation of a collective outcome, an outcome that could not be accomplished by one member due to its complexity’ (citing Ruuska & Teigland, 2009).

Huemann et al., (2007) provided review of Human Resource management in Project-Based Organizations. In addition to standard HRM practices (‘recruitment’, ‘employment’ and ‘release’, additional HRM processes are added: ‘assignment to project’, ‘employment on project’ and ‘Dispersion from project’ as continuous cycle from a project to another project. ‘Employment on project’ incorporates processes of performance, appraisal, development and reward in frame of projects; it is argued that leadership of project manager is critical during that process as well as career development support for project team and project manager are also important. It was found that HRM processes in Project-Oriented Companies are of limited research.

Findings from few key literature sources regarding HRM in Projects are summarized in the Table 1. Review of HRM in project based settings and lack of research in that area as well as model of HRM processes in project-oriented companies are introduced in Huemann et al., (2007) which is complemented by HRM processes in project deployment (Dainty et al., 2009). Further, Bredin & Söderlund (2011), Keegan et al., (2012), Medina & Medina (2014) discuss different functions and roles in project-based firms. Work of Turner et al., (2008) is continuation of the research of Huemann et al., (2007) with the respect of employee wellbeing in project settings.

<p>| Table 1: Findings from key papers about HR in Project-Based organizations |
|----------------|----------------|----------------|
| <strong>Author/Date</strong> | <strong>Methodology</strong> | <strong>Main Findings</strong> |
| Huemann et al., (2007) | Review of literature in Project Management, Management and HRM. | Simple model of HRM processes in project-operated companies was developed. Research about HRM practices, processes in project-based settings is limited. |</p>
<table>
<thead>
<tr>
<th>Source</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
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<tbody>
<tr>
<td>Turner et al., (2008)</td>
<td>Semi-structured interviews</td>
<td>For large projects or internal more balanced time of employees reported. The especially high pressures on employees are in small to medium external projects due to simultaneous number of projects at same time and lack of predictability of new projects.</td>
</tr>
<tr>
<td>Dainty et al., (2009)</td>
<td>Semi-structured interviews</td>
<td>Successful project resourcing strategy is highly supported by information system capturing individual employee perspectives on their skills, competencies, and personal needs.</td>
</tr>
<tr>
<td>Bredin &amp; Söderlund (2011)</td>
<td>Multiple case study</td>
<td>HR quadriad for HRM analysis is developed as collaboration of four roles: HR specialists, line managers, project managers, and project workers. Two types of project work identified: intra-functional and inter-functional affecting roles and complimentary HRM practices.</td>
</tr>
<tr>
<td>Keegan et al., (2012)</td>
<td>Four case studies</td>
<td>For PBO organization HR practices are shared by Line managers, PM and HR managers: Lack of clarity in roles. PM key practices: assignment to projects and appraisal of project personnel.</td>
</tr>
<tr>
<td>Medina &amp; Medina (2014)</td>
<td>Semi-structured interview</td>
<td>Involvement of PM in selection and training and development enhances ‘Competence utilization’ in company. HRM practices need to be aligned with the project context.</td>
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Conceptual model for exploration research is summarized in the Figure 2. The model represents assumptions that Human Resource Practices (represented by recruitment, selection, human resource planning and other practices, discussed in section 2.5.) would influence competences enhancement in the team level. Different models of competences are shown. Further, it is expected that context of industry which in first turn is represented by ‘uncertainty’ and ‘complexity’ (introduced in section 2.3.) as well as type of projects being characteristics of IT industry defines competences needed. Further, competence support systems discussed in section 2.4 would also contribute to competences enhancement.
Figure 2: Conceptual Model
3. Research methodology

Research methodology is regarded extremely important and recommended to be accomplished before the research is undertaken. Thus, the ontology (objectivism, subjectivism) and epistemology of the study (positivism, interpretivism) should be defined in advance. Besides, to reach satisfactory end results, research methods and its strategy need to be identified. Enquiry elements such as strategies, methods and knowledge claims allow to form research approaches (Creswell, 2003).

This part of the current thesis addresses methodological stances and philosophical assumptions as well as provides in-depth description regarding the selected methodology, research approach and strategy. The description provides the evidence of alignment with respect to the above-mentioned concepts. Also, the advantages and limitations of the employed methodology including the measures taken to overcome them are discussed. To determine the relationship between Human Resource Management (HRM) practices in Project Teams from Project Managers / Project team members perspective in Project Based Organizations as well as skills (competences) necessary in IT Industry this research is based on:

- Literature review related to four main components of this research such as HRM practices, necessary skills for project managers, support tools and the selected industry from researchers’ perspective;
- Six semi-structured interviews with two project managers and four project members in four different IT companies in France;
- Case study from four companies.

In order to minimise any possible error and bias, the current research uses diverse information sources. According to Saunders et al., (2003) and Bryman & Bell (2003), research methodology including various sources of information can at the best confirm research outcomes and reduce errors. The following part of the current research discusses the philosophical stances, approaches, strategies as well as methods deployed to obtain the objectives set under the current study.

3.1. Research Philosophy

Research philosophy is related both to the development of the knowledge and the nature of that knowledge. In general, Research philosophy implies crucial assumptions with respect to the way how the world is viewed by researchers. In this regard ontology, epistemology and axiology represent the three main ways of thinking regarding research philosophy. They all defer from each other in the way the researcher thinks about research process. Therefore, ontology, epistemology and axiology of the research are determined mainly on the basis of research question (Saunders et al., 2007). The research strategy and methods selected are based on these assumptions and they will guide the entire research process.
3.1.1 Ontology

Ontological assumptions are related to the nature of social reality and what one should know about the world (Ritchie et al., 2014). These kinds of assumptions seek to know which social reality exists or can exist and under which conditions they are available as well as the ways through which they are related (Blaikie, 2010). Furthermore, according to Ritchie et al., (2014) the major questions stemming from ontological stance are concerned if the social reality exists independently of human interpretations as well as consider the nature of its existence such as shared realities, multiple or context-related. Two different directions of ontology are objectivism and subjectivism. Saunders et al., (2007) describe objectivism as ‘social entities existing in reality external to social actors concerned with their existence’. Objectivist view highlights the structural part of management and supports assumptions according to which management process is similar in all companies.

Although, structure of management may slightly differ, but the essence of the process is almost the same in all companies (Saunders et al., 2007). However, subjectivism implies that social reality is formed through social actors’ perceptions which are concerned about their existence. In other words, one should distinguish the world as it is from the interpretations individuals hold about it (Ritchie et al., 2014). Furthermore, the subjectivism holds the view that the only possibility to understand the reality and deduce sense of social behaviour is to get involved in the social activities. As a result, the researchers hold various positions regarding these two ontological directions. While, objectivist path suggests standing outside and acting as observer of the world while subjectivists are part of what they observe (Bryman & Bell, 2003; Saunders et al., 2007). Moreover, Subjectivists assume that through constant interaction social reality is subject to permanent state of revision. Saunders et al., (2007) emphasises the importance of exploring the details of any given situation to better understand the reality. Similarly, the philosophy based on interpretivism suggests studying the subjective meaning of social interactions for the researcher to be able to draw consistent conclusions. According to constructionism view the reality is socially constructed and individuals interpret situations in which they find themselves, in a varying way as result of their world view. Therefore, it is the researcher’s role to understand the subjective reality of the individuals to be able to give sense and understand their intentions and interpretations in order to reach meaningful results; thus, we position ourselves in subjective ontology.

3.1.2. Epistemology

According to Saunders et al., (2007) epistemology is concerned with ‘what constitutes acceptable knowledge in the selected field of study’. Under this assumption there are three main directions which are positivism, realism and interpretivism. In order to make differences between positivism and interpretivism the author presents positivists as ‘resource researchers’ and interpretivists as ‘feeling researchers’. The researcher (the ‘resources’ researcher) who regards data as most accurate way of conducting the research is closer to the position adopted by the natural scientist. These researchers are likely more comfortable with data collection and fact analysis. For them objects are considered to be real which represent the reality, such as computers, trucks and machines. As these mentioned objects have a distinct existence, compared to that of researcher, this researcher may reason in the way that data is less subject to bias, thus more accurate.
Therefore, positivists put focus on the facts and physical or natural science underpins their doctrine. However, interpretivists explore the meaning of objects and seek to understand the reality from various perspective which relates to social science. Interpretivism derives its heritage from phenomenology and symbolic interactionism traditions. Phenomenology relates to manner in which human being make sense of the world while symbolic interactionism refers to constant process of providing interpretations about the social world surrounding us. Interpretivist researchers need to adopt empathetic view. According to positivism, the knowledge can only be created by making observation of the reality and by providing static description. Unlike positivists, interpretivists emphasize the dynamism of the world and argue that it is more reasonable the better understanding of human behaviours rather than explaining them as natural scientists do (Bryman & Bell, 2003). Therefore, social actors constitute the centre of this philosophy. In terms of the development of knowledge realism path is similar to positivism. This consideration also assumes data collection and understanding of those data. According to Saunders et al., (2007) realism becomes more relevant when at least two forms of realism is confronted. Realism is divided into direct realism and critical realism. According to critical realism, all we experience are about sensations, but not the things directly while direct realism assumes that our experiences, derived through senses, depicts the world as it is. Likewise, direct realist path suggests the world is relatively intact at one level of business context. In contrast, critical realist perspective recognises the usefulness of multi-level research because at each level different interpretations are provided which would influence the researcher’s view. Consequently, critical realist perspective according to which the world is undergoing permanent change is more aligned with business research (Saunders et al., 2007).

In the current study our adopted position contradicts with the positivist approach as we assume that social world of business is extremely complex and should not be guided by definite rules in the form of theories. As a result, interpretivism underpins our research philosophy which considers that research should be conducted ‘among people rather than objects’ (Saunders et al., 2007). We recognise the importance of exploring the situations in-depth in order to better understand the reality (Bryman & Bell, 2003). Similarly, we think that it is not possible to apply the generalisations to theories from outside the organisations’ context. In general view, it is crucial for us to understand the subjective view of project managers and project team members regarding the competences necessary in IT industry. Also, we aim to explore the project managers and project members’ perceptions with respect to the most important HRM practices at team level which will ultimately allow us to find answers to the research question.

3.2. Research approach

The aim of the research approach section in this current thesis is to establish the linkage between philosophical considerations and research design. In this regard, various ways exist to build the research orientation. The identified research question needs to be taken into consideration in order to opt for the most appropriate research approach, argues Creswell (2014, p.14). Also, the research questions are created based on currently existing literature and what is supposed to be researched (Creswell, 2014, p.13). Furthermore, the selected field of study may significantly differ from current literature. Consequently, additional factors such as the researchers’ assumptions and skills need to be considered. Likewise, values, philosophical assumptions, data collection as well as employed
methods need to be aligned in order to obtain legitimate knowledge (Ghauri & Grønhaug, 2010, p.13).

Deductive and inductive are two research approaches identified by Saunders et al., (2009). They are considered as two major approaches to build connection between theory and research (Bryman & Bell, 2003).

3.2.1. Deductive approach

The deductive approach supports the idea of formulating logically endorsed hypothesis based on current knowledge, existing literature and come to the conclusions by testing them referring to empirical data. Ultimately, based on the final conclusions the researcher hypotheses can either be accepted or rejected (Bryman & Bell, 2003). The researchers’ task is not only limited to formulate the hypothesis trough the current literature but also to display in a structured manner how data collection should be made and underpin concepts to be used (Ghauri & Grønhaug, 2010, p.15). Deductive approach considering the consequences of the current theory and associated with cognitive reasoning, leads the researcher to accept, reject the existing knowledge which paves the way to the prediction or explanation. Also, the outcome obtained from the research can be generalised (Ghauri & Grønhaug, 2010, p.16).

3.2.2 Inductive approach

To address the human interpretations of the social reality neglected by deductive method, inductive orientation has been introduced. Induction approach starts by providing a definition to a certain problem referring to the available literature or theories and examines it through empirical data obtained to bring a contribution to theory (Ghauri & Grønhaug, 2010, p.14). It is argued that if subjective human considerations are examined in appropriate context they can provide better understanding and explanation of social reality (Saunders et al., 2009, p.126). From inductive research approach, perspective ‘the social world can only be observed or measured using researcher’s-defined concepts’ (Blaikie 2010). This demands from researcher to draw general conclusions based on collected data, set of characteristics in the predefined field of study to provide solid answer to ‘What’ research question. while such final conclusions cannot be generalised to social sciences (Blaikie, 2010).

In order to select the most suitable approach to the current thesis, it proved crucial to analyse available academic literature and concentrate on particular aspects of the study domain.

The current literature regarding the research approaches supports the idea that deductive approach reconciles with positivism, while inductive considerations concern interpretivism. According to Bryman & Bell (2003), inductive strategy favours bringing narrow domain-specific observations to the theory which is opposite of deductive approach. Similarly, in our thesis we examine in detail the existent literature both in terms of HRM practices and PM competences, come up with the set of competences necessary for project team members and identify the HR practises in project based organisations. Further, we proceed to data collection from project managers and project team members to examine the relationship between HRM and PM skills in project teams. The combination between empirical data and detailed literature review will allow us to interpret and develop the set of skills and HRM practices used in practice and the
connection between them. Therefore, it is important in this thesis to opt for inductive approach to establish a linkage between philosophical stances and research design.

3.3. Research Strategy

The current section seeks to specify the methods to be employed in order to collect data. The way data are analysed or collected is regarded as the main activity in any social research (Blaikie, 2010, p. 24). The choice of data collection method is deeply related to the philosophical assumptions of the researcher and mainly two streams or their combination are employed in the research: quantitative and qualitative (Saunders et al., 2009). The way these two data collection methods defer from each other is whether the research is focused on numbers or words. Quantitative method is employed to deal with numerical information collection technique (questionnaire) or the procedure to analyse them (statistics) (Saunders et al., 2009). Furthermore, Bryman & Bell (2003) stress that quantitative research method can be selected if the research highlights quantification regarding data collection and analysis. However, they also mention, that qualitative research contradicts quantitative technique in a way that research strategy built on that put accent on words rather than quantification in data collection. The following Table 2 details the major differences proved useful when selecting a suitable strategy to the current research.

<table>
<thead>
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</thead>
<tbody>
<tr>
<td><strong>Quantitative method</strong></td>
</tr>
<tr>
<td>Focus on testing hypothesis</td>
</tr>
<tr>
<td>Emphasis on facts for social events</td>
</tr>
<tr>
<td>Critical and logical approach</td>
</tr>
<tr>
<td>Control on measurement</td>
</tr>
<tr>
<td>Objective view away from data</td>
</tr>
<tr>
<td>Result oriented</td>
</tr>
<tr>
<td>Particularistic and analytical</td>
</tr>
<tr>
<td>Generalisation by population</td>
</tr>
<tr>
<td>Generalisation by comparison of context</td>
</tr>
</tbody>
</table>

Nevertheless, qualitative technique involves research that examine social phenomena in its natural context by drawing conclusions based on the interpretations of meanings that individuals attribute to them (Creswell, 2009, p. 175). Therefore, the words are most crucial compared to numbers (Bryman & Bell, 2011, p. 27). According to Yin (2009, p. 135) qualitative research design is advantageous in terms of understanding and explaining the social world from participants’ point of view. Also, qualitative research is the combination among rational, intuitive and exploratory views where researchers’ skills such as analytical thinking and ability to minimise biases prove to be vital (Ghauri & Grønhaug, 2010, p.104). Qualitative research methods are characterised by their flexibility and as being unstructured employ restricted numbers of observations to explain specific area of study. Even though observations are numerically limited, they permit to explore in-depth various aspects in the researched field. Therefore, this method is the
most appropriate when the purpose of the research requires detailed approach to the social phenomenon (Ghauri & Grønhaug, 2010, p.106). Nevertheless, some researchers criticise qualitative method arguing that subjective conclusions are the result based on the unsystematic views of researchers. Similarly, unstructured nature inherent to qualitative methodology prevents the findings from being generalised and have negative impacts on the transparency (Bryman & Bell, 2011).

However, in the current thesis, qualitative approach aligned with our philosophical orientation is the most suitable to understand competences and HR practices from project managers’ and project team members’ perspective. Considering the drawbacks and advantages of this method our main objective is to identify HRM practices applied in IT industry in France, which cannot be achieved through rigorous methods the quantitative method approves. Therefore, to neutralise such limitations and to ensure valid data we will use triangulation as Stemler (2001) suggests which implies references to various sources and theories.

3.4. Research purpose

Research problems may be different in terms of structure. Depending on the problem structure, three major research classes are differentiated (Ghauri & Grønhaug, 2010, p.56):

- Explanatory-related to structured problem;
- Descriptive-related to structured problem;
- Exploratory-related to unstructured problems.

3.4.1. Explanatory research

Explanatory research goal is to set up a casual linkage among distinct variables by examining a specific situation to provide solid explanation to the existing relationship between those variables (Saunders et al., 2009, p.138). Furthermore, within this research the empirically collected data would be statistically tested by means of correlation with the aim of obtaining more accurate view regarding the relationship.

3.4.2. Descriptive research

Descriptive research purpose seeks ‘to portray an accurate profile of persons, events or Situations’ as argue (Saunders et al., 2009, p.138). This research can also be employed as an extension of an exploratory method in which it is necessary to possess a clear idea of the social phenomena before data collection is launched (Saunders et al., 2009, p.138).

3.4.3 Exploratory research

Exploratory research presents itself significantly crucial method to see what is going on in reality and consequently enables to bring new insights by evaluating social phenomena under a new perspective (Saunders et al., 2009, p.139). Exploratory research proves to be particularly important when the researcher aims to understand a specific problem. Exploratory research can be conducted being based on three directions:

- Literature search;
- Interviewing specialists in the field of study;
- ‘Focus group interviews’.
Flexibility and adaptability inherent to exploratory study are its main advantages. By employing this method, researcher would adjust the research direction on the basis of emerging data. Saunders et al., (2009, p.139) argues that adaptable nature of this research is not synonym of absence of research direction. In contrast, this means that focus at the beginning is broader but is being narrowed down according to the research progress.

Having in mind the aforementioned descriptions characterising the exploratory research, in the present study we consider it as the most suitable to realise our research objective. As mentioned in the literature review and introduction we conduct this research to explore the relationship between HR practices in project-based IT companies. Besides the most important competences for project team members are explored through project managers and team members perspective which is under researched area. We believe that these interconnections can be better understood through in-depth literature review and moving from general study field to narrower area as required by exploratory research. Therefore, broad literature review combined with interviews with experts will certainly enable us to establish valid explanation (Ghauri & Grønhaug, 2010, p.56).
4. Research design

This section focuses on the research enquiry strategies to be employed in line with the exploratory research that underpins the current study. According to Yin (2003) even though all the inquiry strategies can be chosen for exploratory research, some of them better suits the inductive method employed for the present research. Saunders et al., (2009, p.141) highlights that ‘no research strategy is inherently superior or inferior to any other, what is most important is not the label that is attached to a particular strategy, but whether it will enable you to answer your particular research questions and meet your objectives’. Finally, in addition to the research objective, the selection of the research enquiry strategy depends on various factors such as adapted research philosophy stances, the level of the current knowledge and available time to conduct the study (Saunders et al., 2009, p.141).

4.1. Qualitative inductive research

According to Saunders et al., (2009, p.141) the qualitative research based on inductive approach can be better explained through grounded theory, ethnography and case study inquiry strategies, as it summarized in Table 3.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Grounded theory</th>
<th>Ethnography</th>
<th>Case study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Developing a theory based on data from the field</td>
<td>Describing and interpreting a culture-sharing group</td>
<td>Describing and interpreting the common patterns of culture of a group</td>
</tr>
<tr>
<td>Problem structure appropriate for the design</td>
<td>Grounding a theory in the views of participants</td>
<td>Interpreting the common cultural patterns of a group</td>
<td>Establishing a detailed analysis of case</td>
</tr>
</tbody>
</table>

4.1.1 Grounded theory

Grounded theory is usually associated with theory building by combining inductive and deductive approaches. It proves to be necessary for the study which aims to provide behavioural predictions and explanations of social phenomenon in the field of study (Saunders et al., 2009, p.141). In this research inquiry strategy, researcher starts to gather information without referring to the existing theory framework which requires the theory to be built based on data collected through number of observations. Progressively obtained data enables to generate predictions subject to additional test which can confirm or not generated predictions (Saunders et al., 2009, p.142). Ultimately, the theory will be rooted on the frequently referred data.
4.1.2. Ethnography

Ethnography is deeply related to the research based on inductive approach. Ethnography is an inquiry that seeks to describe the social phenomena through the individuals’ view inhabiting it (Saunders et al., 2009, p.149). It is time consuming for the reasons such as, the researchers are required to involve herself/himself to the context of the chosen area, become completely part of it. Furthermore, this strategy is fulfilled based on the observations through extensive participations as well as it demands a significant level of flexibility as the researcher’s new considerations formed out of gradual observations will cause changes (Saunders et al., 2009, p.149). Also, ethnography refers to the study of the social phenomena in its context but excludes the use of data gathering methods which would simplify complexities characterising the social life (Saunders et al., 2009, p.150).

4.1.3. Case study

Case study in management-specific research is significantly helpful when the social phenomenon to be examined is complex to explore without considering its natural context. When the context is absent, most of the social phenomena is not correctly understood (Ghauri & Grønhaug, 2010, p.109). Besides, it proves to be extremely important when concepts under investigation cannot be quantified (Yin, 2009, p.109). Also, big number of variables render other practices such as experiment, or surveys obsolete in qualitative research (Blaikie 2010, p 191). In addition, the suitability of case study is defined according to the research objective, as a result it is not appropriate for all kinds of research (Ghauri & Grønhaug, 2010, p.109). This in mind, case study is mostly employed when the research aim is related to theory developing or building. The major characteristic of it is grounded on the intensity of research with respect to the situation, individual or the organisation. The researcher needs to possess enough information to provide explanations regarding the unique aspects of the case as well as to display the shared features from different cases. Also, case study allows to achieve wider understanding of the researched area and as is regarded to be efficient strategy to answer ‘how?’, and ‘what?’ research questions (Saunders et al., 2009, p.146) Ultimately, this enquiry strategy relies on the ability to explore the selected topic from many perspectives and deduce integrative conclusions (Ghauri & Grønhaug, 2010, p.109).

According to Yin (2009, p.109) four types of case studies exist.

- Single case, holistic;
- Single case, embedded;
- Multiple case holistic;
- Multiple case imbedded.

Single case is preferred if the specific case is regarded as critical and the researcher by using it wants to proceed to test the current theory. If the single case satisfies all the necessary conditions to challenge the existing theory, the case can be considered as legitimate. In addition, the choice of multiple or single case depends on the factors such as the research approaches and if the researcher strives for general or particular explanation of the study area (Ghauri & Grønhaug, 2010, p.114). However, if the research is based on inductive approach and general deductions are to be achieved the multiple case inquiry must be favoured (Ghauri & Grønhaug, 2010, p.114).
The choice of multiple case has both advantages and drawbacks. Even though single case serves specific objectives, selection of multiple case adds more weight to the research making the final results more reliable. However, multiple case should be preferred if only it follows the replication logic (Blaikie 2010., p 191). Another major disadvantage of the multiple case strategy is that it demands significant amount of resources and time. This limitation can be offset because two researchers are conducting the current study (Yin, 2003, p. 47).

After examining each practical option, in the current research we opted for the use of case study. This choice is guided by the facts that such an approach would enable to gain broad understanding of the contextual environment in which project managers and project team members exist and gather data at team level. Furthermore, as we intend to generalise our findings to IT industry in France we decided for multiple case (embedded) strategy also because our research target includes sub-units (Blaikie 2010., p 191) such as we first identify the competences and then explore HR practices used to enhance them. Thus, project managers and project team members are considered as individual workers. The main limitation inherent to imbedded case is that the researchers may excessively focus on sub-units and ultimately fail to consider the broader unit. Having this in mind, we frequently refer to the selected organisations. Besides, according to Yin (2009, p. 6) case studies can be categorised as exploratory, explanatory and descriptive. Therefore, as our research is based on exploratory approach, multiple case (embedded) case study is the best fitted enquiry strategy.

4.2. Literature selection methods

The present research is based on conventional literature review to achieve broader knowledge area. Jesson, et al., (2011, p. 11) highlights the importance of traditional method based on current knowledge which enables to reach comprehensive literature. Consequently, literature review section of the present work reflects the relevance to the research objectives.

Appropriate literature was obtained through search engines freely accessible in the library of Umeå Business School and Economics. Mainly, academic articles from relevant journals such as International Journal of Project Management, Journal of Human Resource Management are used as reference. Also, some books from well-known authors in project management domain were referred to. In addition, Google scholar is also considered for both relevant articles and web-based articles. To guarantee the reliability of the research mainly articles published between 2000-2017 were considered. The search of literature articles was carried out following two steps. Initially, we proceeded to the search employing phrases such as Human Resource Management practices, Project-Based organisations, Project Manager’s competence and skills. In order to assess responsiveness to our requirements under explored topic abstracts of articles were scrutinised. On the basis of this relevant articles were approved for detailed analysis. Secondly, complementary articles were defined through the reading of predefined articles. Relevant references cited, and key words were extracted from those articles to find additional appropriate material.
4.3. Data collection method

According to Saunders et al., (2009, p.318), data collection techniques need to be consistent with the adopted research methodology, philosophy and strategy. As mentioned in previous chapters of this current study, the choice of ontological interpretivism to examine a new contribution to the theory based on inductive approach leads us to opt for the interview as a major data collection tool. Saunders et al., (2009, p.320) argues that various type of interviews exists and when selected properly it is the most suitable data collection mean for qualitative research. Depending on the structure, qualitative interviews are classified into distinct categories such as structured, semi-structured and in-depth interviews. Based on the research purpose the one which fits the best will be selected.

4.3.1. Structured Interview

Structured interview refers to questionnaires using related questions in a standardised way. Interviewer reads out the question and proceeds to recording response usually with coded answers. Questions should be read as they are written, and the voice tone must be the same to avoid any possible biases. This kind of interviews are intended mainly for quantifiable data collection, therefore usually employed by researchers involved in qualitative research (Bryman & Bell., 2015 p-480). However, semi-structured and in-depth interviews are mainly referred when the research is based on qualitative approach (Saunders et al., 2009, p.320).

4.3.2. Unstructured Interviews

Unstructured interviews are conducted in informal manner and aimed to explore deeply a general area of interest. Therefore, questions are not prepared in advance although the researcher needs to have a clear idea about the research topic. The interviewee talks freely about the aspects such as general beliefs, behaviours in relation to the chosen topic. Given this nature of unstructured interview it is labelled ‘non-directive’. Thus, the conduct of the interview is shaped by perceptions provided by interviewee (Ghauri & Grønhaug 2005).

4.3.3. Semi-structured interviews

Semi-structured interviews refer to different sections of literature and list of questions related to the researched field to be covered. Therefore, depending on the specific context in relation to the research subject some of the questions may be omitted or adjusted. Also, questions order may vary depending on the fluidity of the conversation (Saunders et al., 2009, p.320). Furthermore, complementary questions may be needed with respect to the research objectives given the particularities within companies (Bryman & Bell., 2015 p.482).

Considering the above-mentioned aspects of interviews, we believe that the most appropriate interview for the current study is semi-structured interview. This type of interview is employed when the collected data is supposed to be analysed qualitatively (Saunders et al., 2009, p.320). Besides, non-standardised interviews are best aligned with
exploratory research which is very useful to examine the happenings in the social world (Robson, 2002, p.50).

4.4. Respondents selection

Depending on the research objectives respondents for the interview were chosen from project-based IT organizations operating in France. As the current research seeks to explore the competences necessary for project team members, two respondents (project manager and project team member) from each company were selected. All the respondents were interviewed through internet-based electronic means such as either via skype or WhatsApp. Saunders et al., (2009, p.349) argues that for the research based on qualitative approach, face to face interviews should be favoured instead of electronic or telephone interviews. However, as all the companies from which respondents were selected are based in France, specifically in Paris and Toulouse cities, internet-based interviews proved to be the most suitable. In addition, internet-based interviews may also provide more sincere answers because of its anonymous aspect (Saunders et al., 2009, p.350).

Respondents for the interviews are selected based on three main standards:
- Project managers and project team members must be from the same team;
- They must have at least five-year work experience in the related field;
- They must be involved in IT projects.

Some unexpected difficulties were encountered before the interview process especially regarding the title assigned to project managers such as in some companies they were named project team leaders. Similarly, due to the unavailability of some relevant respondents which is necessary for the research validity, personal networks were considered to ensure the sufficient number of interviews to be conducted. Known as snowball method, it allows to contribute to the validity of data collection process (Bryman & Bell, 2003). For the confidentiality reasons names of companies and respondents are not mentioned, however, their position and work experience are indicated. Information about Interviews arranged and Respondents is indicated in the Table 4.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Respondent</th>
<th>Position</th>
<th>Experience, years</th>
<th>Interview duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation 1</td>
<td>Respondent 1</td>
<td>Project Manager</td>
<td>14</td>
<td>30:00 min</td>
</tr>
<tr>
<td></td>
<td>Respondent 2</td>
<td>IT developer</td>
<td>6</td>
<td>38:14 min</td>
</tr>
<tr>
<td>Organisation 2</td>
<td>Respondent 1</td>
<td>Project Manager</td>
<td>8</td>
<td>25:04 min</td>
</tr>
<tr>
<td></td>
<td>Respondent 2</td>
<td>IT developer</td>
<td>5</td>
<td>33:07 min</td>
</tr>
<tr>
<td>Organisation 3</td>
<td>Respondent 1</td>
<td>IT developer</td>
<td>6</td>
<td>45:25 min</td>
</tr>
<tr>
<td>Organisation 4</td>
<td>Respondent 1</td>
<td>Software developer</td>
<td>6</td>
<td>49:55 min</td>
</tr>
</tbody>
</table>
Initially our list of companies included up to 20 companies (Ghauri & Grønhaug, 2010, p. 127) which were selected through LinkedIn. Nevertheless, considering time constraint, personal contacts in the field of study were preferred. Respondents were requested to participate in the interview by means of email. After respondents expressed their will to participate in the current research, interview date, convenient time and methods were agreed via email. Later interview questions were translated from English to both French and Russian languages following respondents’ preferences (Ghauri & Grønhaug, 2010, p. 128).

Considering the disadvantages of note-taking we used a voice recorder and avoided any possible distraction. However, before we launched the recorder we requested permission from Respondents. Later interviews were translated into English and transcribed for examination.

4.5. Interview Process and Design

In order to achieve respondents’ trust, the interviews started with succinct presentation of the researchers’ study background as well as research aim was presented briefly, clarifying any possible obscure point that interviewee might consider necessary (Saunders et al., 2009, p.326). As suggested by Bryman & Bell (2011, p. 467), overall interviews were conducted in a flexible manner enabling to gather the needed information for the research. Likewise, in order to obtain their perceptions, all efforts were deployed to make respondents speak openly in relation to the questions asked by holding the possibility to ask some follow-up question if necessary (Saunders et al., 2009, p. 319). Questions asked to respondents were covering four main parts of literature review and going from more general to more specific aspects (Figure 3).

**Figure 3**: Interview questions vs. objectives

However, all the questions were open-ended allowing the respondents to share freely their knowledge and experience. This kind of approach aims to improve the researchers’ practical knowledge in the field of study and contributes to the existing knowledge area. All the interviews lasted on average 35 minutes even though timeframe was estimated two hours by researchers in anticipation of possible delays or extension of predicted interview time. To prevent any possible constraints the researchers proceeded with a trial call to assess the quality of the interaction at the earliest stage. Besides, particular importance was attached to the place where interview took place with the aim of ensuring high internet accessibility and absence of any external factors such as noise able to
negatively impact the conduct of interviews. Moreover, all the questions were asked with similar tone and intonation to avoid possible partialities and influence on respondents. Similarly, respondent biases can be minimised by interviewing people from different organisational level, which in our case was both project managers and project team members from the same organisation (Saunders et al., 2009, p. 320). One of the inherent drawbacks of internet-based interviews is that the researchers cannot observe body reaction of respondents to the questions. For instance, our interviews via skype or WhatsApp deprived us to some extent from closely seize the reaction other than verbal. Generally, we did not encounter any particular issue during the conduct of the interviews.

Nevertheless, since the current research relies mainly on empirical data obtained from the respondents this can be considered as a limitation. Aware of this, we follow suggestions formulated by Yin (2009, p. 11) by proceeding to triangulation of the findings. Even though, secondary data could not be obtained from the companies due to confidentiality reasons, our choice of interviewing two project team members and the presence of two researchers enabled to some extent to overcome this limitation.

4.6. Criteria for qualitative research

The current research tries to adhere to the most applicable criteria suggested by various scholars. Saunders et al., (2003, p. 100) argue that there is not defined framework to evaluate the quality of a research, however some commonly recognised factors need to be taken into account in order to produce a research work of high quality. Besides, Saunders et al., (2003, p. 100) identified validity and reliability as inevitable assessment criteria in business research. In addition, although these two factors are the most appropriate criteria, they need to be adjusted in a research based on qualitative approach (Bryman & Bell., 2011, p. 394). The present research considers criteria suggested by Saunders et al., (2003) applicable to qualitative research based on case study strategy and discussed by Tracy (2010) to ensure specific characteristics of qualitative research.

4.6.1. Reliability/ Objectivity

This criterion seeks to assess the consistency of the research over time and through methods employed by researchers. Thus, reliability of research implies the avoidance of biases and errors which may occur from both respondents’ and researchers’ side (Yin, 2009, p.45). Therefore, in order to be able to replicate the current research it was considered necessary to describe in detail the methods and techniques employed. Nevertheless, we recognise that findings are not expected to be replicated because as the time passes their reality becomes less reliable (Saunders et al., 2009, p. 327). In addition, the presence of both researchers in each phase of the present research was ensured to avoid eventual biases which could negatively impact on outcome. Empirical data via unstructured interviews were subject to individual interpretation of the researchers and later cross-checked to achieve the most accurate meaning from respondents. Also, the researchers sent interview questions to participants few days before an interview in order to familiarise them with main idea of the research, which is considered by Saunders et al., (2009, p. 328) as suitable practice contributing to research quality. Similarly, during interview process both researchers remained neutral, attentive to respondents and language-related problems were solved by setting French and Russian as the language of interview. One of the researcher is native Russian speaker while second researcher is fluent in French. Moreover, three of respondents were native Russian and three remaining
native French speakers. Thus, we acknowledge that linguistic obstacles may constitute a limitation to the current research. In order to overcome these limitations, interviews were carefully translated to English and double-checked with third party. Different recording applications as well as devices were deployed to prevent any unexpected risk of data loss. All the six interviews were transcribed and stocked in excel file for future reference.

4.6.2. Validity

According to Saunders et al., (2009, p. 157) validity aims to evaluate ‘whether the findings are really about what they appear to be about’ and grouped into External validity which concerns with transferability and Internal validity which deals mainly with credibility and authenticity of research findings.

1. Internal Validity/credibility

This criterion judges achieved findings in terms of credibility and authenticity. According to Ritchie et al., (2014, p. 357) internal validity aims to evaluate whether a research includes various social realities, whether it provides broader understanding of the studied field to people; we believe that in-depth literature description paired with the findings of the empirical data meet the requirements of this criterion. Moreover, the findings associated to the predefined themes provides solid results which are later verified in the case companies.

2. External Validity/transferability

This criterion examines whether the current findings of the research can be transferred or applied to broader population or to other business contexts. In general, it seeks to identify to which extent the findings obtained in specific field of study can be generalised? (Saunders et al., 2003, p.102). Ritchie et al., (2014, p. 357) defines two types of generalisation:

- Representational - concerns with generalisation to broader population,
- Inferential - relates to generalisation to other setting.

As mentioned previously the current research is not designed to be generalised, however, findings of further research in the similar domain can allow it to be expanded. As the research question targets under-researched area which is relevant to HR practises contributing to the competence enhancement in project-based organisations at team level, according to Yin (2009, p.43) the findings of the current study can be used in other cases to provide generalisability.

In addition to above-mentioned criteria we consider Eight “big tent” qualitative quality aspects suggested by Tracy (2010) to increase the viability of the qualitative research.

**Worthy Topic** is the first criterion considered crucial for qualitative research. According to Tracy (2010, p. 230) worthiness of the topic can be determined based on four main criteria - if the research is relevant, timely, significant and interesting, the requirements of worthy topic are met. We can argue that this criterion is satisfied as the present research seeks to identify the relationship between HR practices and competence development which is expected to provide useful insight into both HRM and PM body of knowledge.
Rich Rigor is second crucial element for quality which tries to ensure the research work is realised in proper manner. It requires that research findings are supported by sufficient number of data, the most suitable methods in terms on interviews and data analysis are employed and finally predetermined theoretical background constitutes legitimate alignment with the context (Tracy, 2010, p. 231). As both researchers were actively involved in detailed literature review to guarantee reasonable understanding of the study area this criterion is met as well. However, data collection faced some unexpected changes from one of the company and we could not interview the project manager as planned. Instead, two project team members were selected for interview from similar industry in France.

Sincerity is third factor of quality deemed necessary in qualitative research (Tracy, 2010, p. 233). This implies that inherent nature of good research is about it being genuine and vulnerable. Therefore, according to this criterion researcher is expected to openly discuss the mistakes, possible biases and their implications on the research. As the researchers of this study discuss possible biases in a transparent manner in different sections sincerity aspects were satisfied.

Credibility is the fourth criterion regarding research findings which is related to dependability and trustworthy results also achieves a reality in which audience finds confidence. Credibility criterion was addressed by employing sequential analysis process and cross-checking the interpretations drawn from interviews.

Resonance as the fifth criterion assess the research on the basis of its impact on the audience. Due to some limitations in data collection and the nature of the qualitative approach the current research fails to satisfy the requirements of this criterion. However, even though findings are not meant to be generalizable, the easily accessible language facilitates naturalistic generalisation of the findings (Tracy, 2010, p. 233).

Significant contribution criterion provides assessment regarding the contribution to the current literature. Therefore, this aspect of the quality examines whether the current research clarifies the existing confusion in the literature, whether it renders observable the neglected field of study and finally whether it produces a meaningful sense of empirically collected data? (Tracy, 2010, p. 240). Later sections provide managerial and theoretical benefits of the current research which enables to meet this quality criterion.

Ethical aspects according to Tracy (2010, p. 242) can be grouped into procedural rules, context-related ethics and ethics of work with respondents. Procedural ethics relates mainly to consent which means only after building trust with respondent accurate data can be obtained. While, situational ethics relates to subjective meaning of ethical act. The perception regarding ethics may vary from people to people based on their culture and other factors (Tracy, 2010, p. 243).

The issues related to ethical aspects of the current research are observed throughout the all research study and explained in detail in separate section.

Meaningful Coherence as the last criterion suggested by Tracy (2010, p. 243) examines whether the research question was answered as initially planned and whether the objectives set by researchers are achieved? The researchers attempted to respond to this criterion providing coherent articles in the literature review section and research question
appear logically in the literature. Consequently, analysis, conclusion and implication sections discuss coherently the goals obtained and limitations of the current study.

4.7. Ethical Concerns

The researchers attached particular importance to the ethical considerations at all stages of the current research as suggested by Bryman & Bell (2011, p. 122). Therefore, ethical concerns are mainly addressed in theoretical framework which includes literature review and analytical framework which includes data collection proceedings and its analysis. Saunders et al., (2009, p.183) suggested to consider the following aspects of ethical concerns:

1. Privacy of respondent; 
2. Voluntary participation; 
3. Right to withdraw from the research project; 
4. Agreement of respondents; 
5. Confidentiality of data; 
6. Anonymity of organisation; 
7. Reaction of respondents to the way researchers collect data.

Therefore, researchers of the present work in order to satisfy the confidentiality and anonymity of the respondents and information gathered, decided not to mention the organisations and interviewees names even though real quotations were used to support the arguments. This was achieved by coding the interviewees (respondent 1; respondent 2) and organisations (organisation 1, 2, 3, 4) by naming only geographical location (Saunders et al., 2009, p.183). Moreover, researchers are also aware of the facts that the way the agreement of interviewees is obtained, confidentiality is maintained, and the way in which they are reported might have negative impact on participants (Saunders et al., 2009, p.187). Similarly, interviews may trigger anxiety or seem intrusive which would increase the likelihood of causing harm to participants. Consequently, in order to avoid any possible harm, all participants were informed about the ethical commitment of the researchers and confidential treatment of the interviews only for research purpose were ensured in advance by interview guide. All the respondents were notified that after defence the current research will be made public in Umeå university website. Further, although we were facing time constraint, all the interviews were organised at convenient time and according to participants’ requirements. All the interviews both Skype and WhatsApp were recorded after respondents granted their approval and in the introductory section they were informed that if they don’t wish to answer any question they should feel free to do so.

The current research follows proper citations and referencing for all the articles and literature materials to avoid any issue regarding plagiarism.
5. Empirical findings

Unlike quantitative research data analysis, qualitative research can follow different approaches to analyse empirical data (Ritchie 2014., p.270). Therefore, the current research adapted thematic analysis approach which is regarded as the most suitable for multiple case qualitative data analysis (Bryman & Bell, 2015, p.599). Thematic analysis includes building categories in relation to empirical data in order to answer research question (Ritchie 2014., p.270). Main advantage of thematic analysis is its flexibility which enables in depth analysis of row data. Within thematic analysis approach we refer to ‘Four Stages of Data Analysis’ suggested by Quinlan (2011., p 422) in order to manage the row data. The four phases of data analysis are description, interpretation, conclusion and theorization of findings are presented in Figure 4.

**Figure 4:** The Four Stages Analysis. (Source: Quinlan 2011., p 422)

In the first stage the researchers describe all the interview findings while in interpretation stage they seek to provide meaning to what is said. The conclusion stage deals with grouping the implications of data in a specific area of study. In the final stage the researchers of the current study permanently refer to literature section to examine to what extent the findings are aligned or contradicts with findings of the relevant research displayed in the theoretical framework. In the theorization part the most appropriate findings are associated to the topic under investigation which ultimately contributes to the body of knowledge.

For the thematic analysis main themes were taken as identified from literature framework as ‘Human Resource Practices’, ‘Competences’, ‘Context in IT Industry’ and ‘Support Systems’. Further, sub-themes were identified by coding the interview transcripts into appropriate categories. Further, for some categories more detailed subdivision was developed (for example, specific competences inside of more generic ‘human competences’ category).

5.1. Findings about Context in IT Industry

For the **Context** theme sub-themes were identified as project role, project type, organizational structure, uncertainty/complexity and challenges.

5.1.1. Project Role

First case participants (Respondents 1 and 2) are the programmer and project manager who deliver financial and audit IT projects to a public sector, specifically to local authorities. The programmer, depending on task works in teams of three code developers with Project Owner in a team who knows accounting and finance and provides
specifications. Project manager supervises two Project Owners. Number of beneficiaries
in a project exceeds 10,000 clients.

The second case is represented by software developer and project manager (Respondents
3 and 4).
Third case representative works as business analyst in finance who becoming Project
Manager since 2018 (Respondent 5). Fourth case participant is IT consultant supporting
logistic software (Respondent 6): ‘I’m in charge of development of new functionalities,
and analysing, correcting bugs, errors [...]’

5.1.2. Project type
The Case 1 representatives work on big project which is very long for IT since it was
started in 2003. As Respondent 1 said ‘one big project -we have 10 000 clients, [...] using
our software for their accounting or financing calculations – to confirm mandates,
expenditures, loans, real estate.’ As the PM from the organization (Respondent 2)
clarifies ‘ [...] we are requested to improve it so that it is up to date with the government
standards.’

Case 2 company leads many projects for different customers providing various IT
services. For example, it is software providing the Client to follow customer feedback.
Those projects are both long-term and short-term in range being in general from 6 months
to 2 years. ‘Any of our projects require detailed specification. Otherwise, the last product
may not meet their needs’ as the Project Manager (Respondent 4) discussed.

Respondent 5 (Case 3) project is ‘order management system’ program which is used by
traders to buy or sell financial instruments, for example, forex, stocks and obligations.
Respondent 6 (Case 4) is currently involved in long-term project which is management
system working with flow of goods and services to foreign countries or to national
destination.

5.1.3. Project complexity/uncertainty
Complexity for Respondent 1 opinion (Case 1) was mainly relevant to ‘problem analysis’
which is provided by Project Owner ‘ [...] he must ‘feed’ us with finance solutions, [...] needs
to tell what and how it must work [...] and we work on that analysis and implement it in life that is we convert text into Java code and new developments ‘– developers do not
have financial competence to decide how software needs to work. Since that is long-term
ongoing software when, for example, new parameter introduced that caused issues to
overall software and no clear instructions were provided by Project Owner - ‘he wanted
it work good as it was without parameter but what is good and then we had joined with
programmers and arranged debates with Product Owner and Project Manager who was
acting as judge’. Also, it was mentioned, that since this is very long ongoing project with
clear horizon as well as since that Company is one of the biggest so clients would hardly
leave to Competitors there is no uncertainty per Respondents’ 1 perception. However, as
per view of Project Manager (Respondent 2) ‘This project involves lot of communication
with local authorities which is sometimes tense. Thus, it is complicated to follow
requirements set by the government and respective public organizations.’ That
demonstrated that from Project Manager’s perception this long-term project is more
challenging, compared to developer’s (Respondent 1) opinion.
Considering Case 2, Per Project Manager’s (Respondent 4) viewpoint, main issue of IT projects is that ‘client is not able to express their needs with sufficient details’ which forces to communicate with Clients ‘each time we complete a small stage of the projects’. Moreover, as the Team member (Respondent 3) notices, ‘We operate in uncertain environment, clients’ requests change during the development phase of the projects. We continuously need to be in contact with them in order to make sure we understood the specifications’, which is confirmed by the Project manager (Respondent 4) saying that it is necessary to understand ‘what exactly the customer wants’. Both Project Manager and Team member of Case 2 highlighted that delivery on time is very important, moreover, as the Team Member (Respondent 3) clarifies: ‘[...] meeting deadline is not easy because of recurrent changes to be considered during each phase of the project.’ Further, complexity of Project is dependent by size of Project as the Respondent 3 mentioned.

Complexity of project in the Case 3 is various during project duration. For example, as Respondent 5 explains, new regulations in Europe (MIFID II) coming in force on 03.01.2018 affecting rules which must be obeyed by traders using the software: ‘our traders they when they sell or buy they need to get to know all those rules and make all their deals in law so not breach these rules and it is highly complicated since it all needs to be known it need often to be in contact with people who write these laws and at same time need to be in contact with traders to be sure they know system well and so on’. Violation of the rules would cause considerable fines for Bank. At another time, when project software requires easier development and maintenance support, that Project is less complex.

As far Case 4 (Respondent 6) is concerned, it was only said that that this is the big project which is connected by related projects.

5.1.4. Organizational Structure

To the context the way or organization of projects was mentioned by Respondent 1: ‘[...] we work in SPRINT methodology – each three weeks we get ‘obligation’, we have three weeks to complete so called in the methodology ‘user story’ it is part of application which later will be used by client’. Some ‘user stories’ are small being just half a day and some are longer - two weeks; those are developed by team of few code-developers in that case ‘Not always we are in team but once a month it happen that some user story needs to be divided into two or three people since it is very big application [...] each person during number of years accumulated some specific experience in one specific direction of application and it happens that user story has few directions at the same time than people who feel themselves as experts in some part of application they join and work together’ (Respondent 1). Respondent 6 (Case 4) also discussed that they work in 15 days cycles. Another organizational sub-theme is relevant to employment relations (configuration) which is typical for France as the Case 2 Representative (Respondent 3) pointed, that people employed in one organization, where his PM works however projects are provided in Client’s organization office as ‘Mission’: ‘I’m working in client’s company [...] during my last mission I developed an application for two years’ as Respondent 3 explained. It is the same situation for Project Team Members from Cases 3 and 4. As was explained, Employment Contract with each one of them (Respondents 5 and 6) is signed with one small (Parental) company which pays salary and that company finds ‘mission’ in client’s
Company (bigger, for example Banks in Case 3) where actually they are working every day. Thus, Project Developers have relationships with two companies. As Respondent 6 clarifies further, ‘We have one person who [...] is our responsible in our parental company, she manages [...] several developers like me in this Company’ who are provided services in different departments.

5.1.5. Challenges in IT

The Case 1 Project manager (Respondent 2) reported that most challenge for IT is big responsibility and people management – ‘main problems inherent to this profession is too much responsibility and [...] human management is the most difficult thing’ (Respondent 2).

Case 2 project Team Members discussed challenges of IT Profession in terms of responsibilities, project success and leading people. As the Project Team Member (Respondent 3) discussed, Project managers have wide responsibility which includes delivery of successful projects: ‘In general, project managers have nowadays more and more responsibilities and are held accountable for project success’ (Respondent 3). The Project Manager of Case 2 (Respondent 4) agrees with challenge of extra responsibilities relevant to project success, recruitment and team building ‘Of course, we always are expected to deliver our project on time within budget and it must be designed exactly as required. Besides, when I was developer I acquired broad technical knowledge, however now as PM I’m also HR manager because I’m in charge of recruiting and, I have the responsibility to build solid teams which meets the project needs.’ In addition, he complements with that team leadership is challenging: ‘Moreover, leading people requires additional skills such as empathy, able to motivate the team members and so on.’ (Respondent 4).

In addition, the Project Team Member (Respondent 3) emphasized that IT industry develops very fast and it is necessary to be up-to-date with it: ‘Main second concern is that PM needs to have broader knowledge and up to date with very fast emerging technologies’ (Respondent 3).

The Case 3 Project Team Member (Respondent 5) discussed that the main challenge in IT people leadership: ‘I would not say that it is most important to manage projects [...] most concern or challenge is to manage people in a team [...] so most complex is that stress management and manage people’ which also was mentioned in Case 1 and Case 2.

The Case 4 Participant (Respondent 6) mentioned two challenges in IT industry for Project Team Specialist. First one is relevant to stress issues in work ‘[...] Sometimes we work under pressure that is not good. We are not more productive [...]’. Second challenge is similar to what was discussed as uncertainty for Case 1 when IT developers (Project Team Members) need to understand functionality of software which requires to communicate in team ‘[...] what we code or develop or program sometimes we do not understand very well the totality of the subjects [...] sometimes we can introduce some bags some errors [...] so it is very important to make with all of team members the meeting or interviews [...] we are doing here at this Company we take care of it but it is not enough perhaps’ as Respondent 6 informed.
5.2. Findings about Skills/Competences

All respondents were asked about important skills and competences both for project team members and project managers. Each Respondent was discussed competences or skills both for Project Manager as well as for Project Team member. It appears that technical and personal sub-themes were discussed as main categories by Respondents. For that reason, that is discussed as those subthemes separated for PM and team member. After reviewing the transcript of interview provided it was indeed understood that all Respondents discussed either technical knowledge and skills or human-related competences both for Project Managers and Project Team Members. That is why only two main sub-themes were used to discuss the results.

5.2.1. Technical Competences (Project Team Member)

All respondents both Project Managers and team Members mentioned that technical skills of team members are of primary importance. Case 1 team member (Respondent 1) emphasized specific programming skills (Java and Data Base). He also mentioned that ‘supporting each other’ in team includes technical skills as ‘review code written by partner in team that is check of mistakes to avoid mistakes in future’. The Project Manager (Respondent 2) agrees that technical skills are most important since products are delivered to thousands of Clients so ‘technical skills first. […] it’s very important to know well the profession in order to meet customer satisfaction’. As far as Project Owner’s Competences are concerned, ‘he must ‘feed’ us with finance solutions – that is he needs to tell what and how it must work he writes what we call problem analysis’ as Respondent 1 mentioned, which was also interpreted as technical knowledge skill of such a team-member.

The Team member from the Case 2 (Respondent 3) discussed the importance of keeping up-to-date with technology which also underpins technical knowledge, Company also supports Microsoft Certification. Further, his Project manager (Respondent 4) also agrees with importance of technical skills ‘I think that first in IT domain developers need to have very solid technical competence’.

Same message is provided by other two case representatives. Respondent 5 mentioned IT, informatics, algorithms and programming as well as context-specific finance and knowledge of regulation ‘[…] since I work in finance and here IT in Finance are most important and then if you know regulation understood as bonus’. Also, for his project analytical skills are important. Finally, Respondent 6 highlighted that knowledges and skills of specific programming language (Java) - ‘I think in our technical view there is some Java is important there are also Elasticsearch.’ Other ‘Missions’ previously involved usage of other programming language.

5.2.2. Human Competences (Project Team Members)

Majority of Respondents mentioned that, in addition to technical skills, team-working and cooperation, openness and communication skills are important for Project Team Members. As Respondent 1 (team member in Case 1) mentioned it is ‘work in team and support each other’ which, a part of team-working and cooperation may mean development of others. His Project Manager (Respondent 2) also agreed that ‘flexibility
in team work’ is critical, in addition to communication and openness: ‘Also, team members need to get along with each other and open to share their knowledge’.

The Project team member (Respondent 3 from the Case 2) also emphasized team-working, communication, openness and reliability - ‘[…] good relationship with team members proves crucial, love to share, listen to team members, rigor and of course being independent’. As his Project Manager (Respondent 4) compliments: ‘[…] should be open, who understands rapidly, also they need to know to ask questions if not they will miss some points’ which adds openness, analytical thinking and ability to consult, dealing with ambiguity and flexibility as important competences: ‘They represent our company in client company, so they must be flexible and their degree of adaptability to unfamiliar environment counts’. In addition, time-management efficiency of team-member per Project Manager’s perception ‘contributes to successful completion of projects’ as was highlighted by the Respondent 4.

The Respondent 5 (Case 3) also highlighted the importance of team-working as he perceives that using term ‘character’; ‘[…] team member it is person who can keep good relationships, support others create good environment need to be positive person since you spend 10 hours in job every day[…]’. That also underlines communication, team-work and cooperation as well as good attitude. Also, curiosity, as personal trait, per Respondent’s 5 personal experience is very important for team-member.

Finally, Respondent 6 (Case 4) also emphasized teamwork and collaboration as well as communication ‘work with the team so we need to know how we can communicate with other members of team so that’s very important’. In addition, ability to finish work day late if required was understood as flexibility.

5.2.3. Technical Competences (Project Manager)

As far as Technical Competence of Project Managers, Respondents provided quite a limited information.

The Respondent 1 (Case 1) mentioned that even Project Managers knows accounting and finance, those knowledge need to be ‘general enough to approve list of tasks for year which is set by people above him […]’ as well Project Manager decides about functionality to be added which is Project requirements and objectives. His Project Manager (Respondent 2) did not discuss any technical competences. It should be noted that both Respondents 2 and 4 highlighted that they chose right team members for different project, and skill sets are different (that is project resource management or human resource management as competence). This will be discussed at next section. ‘Right people with right skill sets are assigned to projects’ (Respondent 2) same as Respondent 4 explained: ‘I first examine the requirements of the projects and then I know which skills are needed. Because even if we always manage IT
projects, skills required by projects may be different. Then I match the requirements with existing developers’ skills.’

Case 3 participant (respondent 5) mentioned ‘technology and regulation’ which is technical and project-specific knowledge. Finally, in Case 4 (Participant 6) discussed that Project Knowledge or Scope Management is important ‘for me the main functionality of PM is flowing us through this software so when we do not know what can we do we can ask question about it and how we can do. He always need to answer our questions [...] just we do not know exactly the subject, we know how we can develop but we do not know what we can develop he/she has to be able to answer all the time our questions’.

5.2.4. Human Competences (Project Manager)

Case 1 Project Team member (Respondent 1) mentioned team-working (‘[…] also decides for good atmosphere in team’) and problem-solving skills (‘[…] arranged debates with Product Owner and Project Manager who was acting as judge […]’). Project Manager (respondent 2) provides more details about it which could be understood as leadership, flexibility and motivation: ‘Definitely human related skills are necessary, management skills, most important is to know how to manage a team. The PM is supposed to lead the team to deliver successful projects. [...] I manage ten people with totally distinctive character, weaknesses and strength. Thus, I’m expected to meet these differences. I think that leading a team is more different than developing a software. Because most of the team members are able to develop this software, even they probably know more than me. However, coordination of the team is complex because PM needs to accompany each team and adapt to each of them. Some of are more independent but not all. I think PM must fill these gaps and attach individual attention to team members. Team members need to be motivated.’

Case 2 Project team member (Respondent 3) mentioned time-management as well as teamwork and collaboration: ‘I think time management is one of the main important skills. Frequent gatherings are important to manage time.’ (Respondent 3). Project Management from Case 2 (Respondent 4) also stressed about importance of communication and self-control: ‘For Project managers human relation is very important, this means the ability to ask question in a kind way, explain something in a way that doesn’t offend the team members’ (Respondent 4). He also discussed that Conflict-resolution is important: ‘Any conflict between team members must be handled by PM’. In addition, organizational abilities were emphasized: ‘ability to prioritize, and organizational skills are very important’ (Respondent 4). Project manager thinks same as Project manager for Case 1 that human relations for Project Manager of higher importance rather than technical skills, further, he stresses on the importance of motivation, problem-solving, team-working: ‘Moreover, leading people requires additional skills such as empathy, able to motivate the team members and so on. If something goes wrong, you need to improve the situation and provide adequate solution’ (Respondent 4).

Respondent 5 (Case 3) discussed that leadership, self-control, teamwork and collaboration is very important for Project Manager which affects results of work in team: ‘If you are PM and if you could not do stress management so your team members would feel it and at that moment they would not be able to work efficiently and could not get good result but if you have quality of leadership and you could well absorb that stress and if you also behave as part of that team and also would not afraid of complex work
and do with them same task and support others then that team members ready to give everything to turn it out so to make everything good and great.’ Communication as well as teamwork and collaboration as well as problem-solving were also highlighted: ‘[...] for sure sometimes PM doesn’t know technology or regulation he may not 100% participate same as other team members but if he participates as other team members it is high bonus for team since team members they feel additional trust and additional support, they know if there is a problem there is someone they can ask or find some exit and so on - it is very important’ (Respondent 5).

Finally, Respondent 6 (Case 4) highlighted importance of self-control (or emotional intelligence): ‘[...] and not to be pressing us or put us to pressure (us that) we need to make (it) quickly that is very important also. We are good project when we are in good mood. [...] It is patience.’

5.3. Findings about Human Resource Practices

All Respondents discussed number of Human Resource Practices. Participants were asked how they communicate with Human Resource personnel to understand what practices were used, further details on competences development were clarified. Before proceeding to themes, brief overview of communication with HR specialists is introduced.

Case 1 respondents that they communicated with HR for data administration (documentation needed regarding employment, for example, for mortgage), internal recruitment for another position or project in Company as well as training and development (providing feedback). Project Team member said that vacations or work from home are regulated by Project Manager. Project Manager (Respondent 2) discussed that HR involved in external recruitment as well as training arrangement. It will be clarified in more detail further.

Case 2 company operates differently. As Project Team member (Respondent 3) works often in client Company, contact with HR ‘is weak only when I have any administrative question, HR is usually concerned with administrative issue’. Project Manager (Respondent 4) working in the same company explained that HR involved in recruitment, administration functions (vacations) and administration issues.

Respondent 5 (Case 3) recalled collaboration with Client Company HR to approve reward during recruitment of new team member. Respondent 6 (Case 4) discussed that he communicates with HR from parental company regarding trainings, holidays and finding ‘missions’ (assignment to projects).

5.3.1. Assignment to Projects

As it was mentioned previously, Case 1 is very long-term project which is subdivided into smaller projects. As Project Manager (Respondent 2) clarifies ‘As I’m working on long-term project the team members remain the same for long time. Team building is done in consultation with my hierarchal superior. Right people with right skill sets are assigned to projects. During project execution, if I notice the need to hire more employee as I explained this decision must be justified and send to HR for organizational issues. As I’m almost the only one to know who I need I select the most suitable candidate following their mainly job-related skills.’ Team member (Respondent 1) complemented – ‘[...] team
size: by new (team member) recruiting or someone left question is asked if we need to replace - if we have lack of work for next year we will not replace or and if workload is divided for all programmers then firm contractor provides for 3-6 months and HR decides to hire someone [...]’ Thus, considering long-term specific of Project, the assignment of new members in project for Case 1 typically is provided by Project Manager when there is lack of personnel by contracting of temporary staff or external recruitment while HR served to administrate employment relations.

As it was described before, Case 2 organizational configuration is different. As the Project Team Member discussed, they are assigned to team on the basis of competence by specific project, further they are interviewed by Project manager from Client’s organization ‘[...] Usually project managers decide about that and then we pass an interview in the Client’s company. Project manager from Client’s company verifies the consistency of our competence with the project specifications.’ The Project manager (Respondent 4) added, that his assignment to project is provided by line manager and then he assigns the project team ‘After I’m assigned to any project by the line manager I’m requested to form my team by bringing together the most appropriate team members. I first examine the requirements of the projects and then I know which skills are needed. Because even if we always manage IT projects, skills required by projects may be different. Then I match the requirements with existing developers’ skills. In case the lack of skills is noticed, trainings are recommended. Also, if internal developers are deployed in other projects then we proceed to external recruitment on the basis of the specified skills’ (Respondent 4). That is, if there is lack of people for project, assignment of new people to project is combined with the external recruitment practice or training and development practices if needed. He also pointed about his responsibility to build the project team:’[...] now as PM I’m also HR manager because I’m in charge of recruiting and, I have the responsibility to build solid teams which meets the project needs.’ (Respondent 4).

Respondent 5 (Case 3) discussed assignment to project from Client’s company perspective. Project Manager and Team Manager (leader who responsible for all projects and 3-4 Project Managers) in Client Company prepare road map of planned projects for next year and if lack of resources is noticed than offer is sent to outsourcing or consulting Company, ‘[...] and that firm they will send resumes so team manager will look and if team manager will see some CV which he like he thinks it is match with project mission so then we conduct interview where teams members are present [...] sometimes we have 2 or 3 interviews and all is good if aligned person, character and knowledges is good so then we talk to HR and if HR also agree amount [...] which Bank pays to Company if that is OK that person starts to work with us’ (Respondent 5). That is, assignment of team members in Client’s Company is also provided according to skill level of employees and if that is not enough, external recruitment through Consultant Company is arranged. For example, since next year Project team member (Respondent 5) becomes Project manager is Client’s company he was involved in additional team member assignment to project by external recruitment : ‘Company where I signed contract it is only me from that Company in team, but in Bank there are 10 or 11 people and those are in few groups and in my group where I’m becoming PM from January there are 3 people and I was told to find another person since I will work for another project so he would help me since it will be too much work and all those interviews were conducted in the Bank [...]’.

Respondent 6 (Case 4) discussed that he joined the Client’s existing team as employee of another Parental (consultant) firm: ‘We had meetings with PM and technical manager
They asked what I did earlier in my experience and then they asked the questions about technology they use in Company and if all of this OK then they ask where I live if can I leave work late [...] (Respondent 6), even though further it was clarified that it happens in two separate meetings – during the first one he was accepted by Project Manager and Team Manager.

5.3.2. Recruitment/Selection

Those practices are provided by HR and Project managers as well as by line managers. For Case 1, Project team member (Respondent 1) discussed that he applied for another project inside of the Company (internal recruitment) and interview was arranged for that. In general, as Project manager (Respondent 2) discussed, HR perform recruitment function posting vacancies and collecting CV’s of Candidates. Project Manager studies CV and identifies the most suitable candidate. Further, HR arranges employment contract. He mentioned that it would be worth if HR would be involved in selection: ‘[...] we are technical people, PM. However, we also recruit even though for me HR is a profession which requires specific knowledge. I think it could be great if HR specialists take part in selection process not only play administrative role’ (Respondent 2). In addition, Project team member (Respondent 1) mentioned about internal vacancies of Project Managers in Company: ‘PM in near open space project is someone who worked in our team as programmer.’

As was discussed previously, Case 2 Project team member (Respondent 3) is employed long-term in the Consultant Company. It was not mentioned about his recruitment into that Company, however as it was mentioned before they are selected for Project by Project Manager in Client’s project in frame of ‘Assignment to Project’ practices on the basis of skill set. However, Case 2 Project manager discussed that he indeed is involved in Selection in the Consultant’s team collaborating with HR staff: ‘HR serve in our company only to recruit [...] me as a PM I’m involved in selection process because [...] I need to assess candidates’ technical skills. This cannot be done by HR specialists’, same way as Project Manager from Case 1 (Respondent 2) answered.

The Participant 5 (Case 3) discussed recruitment and selection from Client’s Company perspective. Is was discussed before, Project Manager and Team manager of Client’s Company (Bank) if there is lack of resources, they provided by external recruitment through Consultant Company, selection is provided by Team Manager/Project Manager. For example, recently he and his director communicated with HR to confirm amount to pay to new team member’s Company who was found (selected) after few interviews. The Participant itself is becoming Project Manager in Client’s Company which is both Internal Recruitment as well as Career Development.

Case 4 Participant (Respondent 6) discussed how he found his job in Consultant’s Company – first, he put CV in LinkedIn and specific website then phone and personal interview: ‘[...]they asked questions about my experience about my skills and then they accepted me and after they found me mission...’. The experience of assignment to the current mission was discussed previously.
5.3.3. Training and Development

The Case 1 Company uses two general strategies for competence development. First, some specific competences are provided by arranged external expert: ‘Seminar with invited star it is HR or someone two positions higher of my chief and they decide to increase level of our programmers and people from few projects all get together in same room in Wednesday’s for example during work time[...]’ (Respondent 1). Also, skills enhancement happens per personal initiative when inside the project team members are invited by mailing list or if that’s needed to support newcomer in team: ‘[...] PM is more responsible, he decides, who will teach newcomers in the project, he asks someone from team, selecting him by some qualities to teach new team member [...]’ (Respondent 1) which is knowledge-sharing inside the team. That practice also supports induction of new members of a team. Project Manager (Respondent 2) explains that planning of training may typically happen at a performance review meeting: ‘At the end of each year we invite individually team members to discuss and evaluate the last year. During discussion, team members are encouraged to discuss their weaknesses they noticed. According to these evaluations some trainings are being planned even if they are not always effective.’ (Respondent 2). He confirms, that if during the year a skill gap is noticed a meeting in team (in form of knowledge-sharing) is arranged to overcome this: ‘[...] usually we prefer kind of training at team level. Because we want every team members to know to do everything. Sometimes if any team member does not know let’s say new version of some software, others are requested to share his/her knowledge. PM decides about personal development because to my opinion HR specialists are disconnected from reality’ (Respondent 2). Project Manager noticed that trainings are improving technical skills: ‘I’m project manager since 2000, so what I need the most is soft skills. However, all the forms of practices, including trainings, knowledge sharing are designed to enhance technical skills. On the other hand, I think that human skills are acquired through experience. So, I think 17 years’ experience as project manager is the most appropriate training in terms of soft skills’ (Respondent 2). Knowledge sharing between different branches would also be beneficial: ‘There is lack of communication between those branches. I believe that it could be beneficial if they share their experience with others. It would be enriching.’ (Respondent 2).

Case 2 Respondents discussed quite a similar system of competency development. First, Project Team member mentioned that Microsoft Certification is desirable, it is sponsored by Consultant Company to prove competence to Client’s company. Both Project Manager and Project Team member said that in case any skill gap, funded by Company training program may be arranged however learning from each other or knowledge sharing is more preferred: ‘[...] IT industry develops at a very fast pace. As a result, we need to remain up to date on the technology. However, as we don’t have enough time sometimes it is difficult to take advantage of this possibility and we prefer learning from each other.’ (Respondent 3). Project Manager (Respondent 4) confirms that knowledge-sharing is most preferred: ‘If I notice one of my team member lacks any competence we discuss with line manager and try to arrange training for them or other team member will help the person to reach the expected level. We usually refer to this method which is more practical because this person will be present in the team and we will not have to look for someone else. Due to the fact that sometimes we have all the developers assigned to projects this method of knowledge sharing in teams proves to be efficient.’
Project Manager (Respondent 4) also states: ‘As PM I believe that being aware of latest technology is important and the same perception is shared at higher level in this company. Consequently, we can choose one training per year which will be funded by the company. However, my choice is approved only if I choose a training in related technical field. Unfortunately, training related to soft skills are not funded by my Company.’ (Respondent 4). Despite being different organization structures of Case 1 and Case 2 Companies findings of Project Managers are very similar. Further, practice of knowledge-sharing as lesson learned from projects is deployed in the Company. As Project Manager (Respondent 4) clarified: ‘[…] besides, after each project, a presentation is organized with all projects managers and team members. It looks like a debate and I think it is very effective way of discussing about accomplished projects.’ Even though it was proved as effective tool, Project Team member (Respondent 3) mentioned that this may be improved if not successful projects would be also discussed: ‘[…] But we only discuss successful projects, probably it could be better to organize event presentations about failed projects in order to understand the reasons of the failure. By doing so, it would be easier to avoid the repetition of recurrent errors.’

Case 3 Participant (Respondent 5) also discussed that there are two categories of training: ‘[…] first one we do in team that means we take new person to the team and each person at team provides to him or her presentation -it may be soft or legal regulation. But if we need skills which we do not have expert in the team we may make the step and demand training and he or she will also go it would be external training when we come to work someone comes and make presentation in a team. In the beginning first type of training is more often and second is very rarely it is so specific which we could not find in a team.’ For second type training Team manager considers that training option depend on skills set they may advise that to Client’s HR so than HR negotiate split of cost of training with the Consultant (Parental) Company. It was also noticed that development of skill required depends on person: ‘[…] it comes with time and that it depends strongly from person as well if he is ambitious and if he has curiosity, so he will go on study, study, study so with time he will be able to close that skill gap’ (Respondent 5).

Respondent 6 (case 4) mentioned that when there is need for language or technical knowledge development (Java or SQL Data Base, for example) they communicate with the responsible person from the Consultant (Parental) Company and make request for it: ‘For example, if my company needs software with new technology, the company I’m work may ask my Parental company […] if they can send me for training and my parental company sends me […]’ (Respondent 6). In addition, each year during regular meeting with HR responsible from that Company training needs are discussed and then Parental Company sends him on training. Other different way it is possible to learn personally doing on-job training (using own computer): ‘I can do myself when I have a time. I can make story with myself. Doing something on my computer. […] When it is personal I can do like that.’ (Respondent 6).

5.3.4. Employee support, retention and motivation

For Case 1 Participants it seems that HR did not provide role on teams’ level –as the Project Manager (Respondent 2) said: ‘I think HR is not so important at our level. When it comes to organize trainings yes otherwise I don’t think they can help. HR is not adapted to help us. They are not adapted to our needs.’ For his team member that kind of practices are provided by Project manager which was discussed when human-related competences
were considered – attention to individual team member, for example. Same, Respondent 1 said that it is Project Manager who provides good environment in team: ‘PM decides for good atmosphere in team [...]’.

Case 2 respondents provided some little different perceptions. The Project Team member mentioned he experienced lack of contact with the Company he employed: ‘[…] we usually work in the client company so the lack of communication with my parent company. I sometimes feel to be forgotten. I would like to have more contact with them.’ (Respondent 3). However, for Project Manager, who based in a Company it is not an issue and only linked practice (Job Design) could be needed to be improved: ‘My Company if needed is always of help, but as we do almost everything it could be better if our responsibilities were better defined. Sometimes the fact I do many things I’m distracted.’ (Respondent 4).

Case 3 Participant (Respondent 5) revealed that he is not in contact with HR also: ‘I do not think so since as soon as in my work as you start we almost do not have contacts with HR unless you need for new resource or you do not change job during 1,5 year [...]’. However, Client’s company Project Manager may take measures to motivate and retain good worker: ‘[…] you talk to your team manager and you may say […] you want work in new project to learn something new and […] if he doesn’t want to lose you if and he is satisfied how you work and so on he will endeavour to find some solution, so you will not be bored [...]’. Finally, the Case 4 Participant (Respondent 6) same as Respondent 3 mentioned that sometimes he lacks a contact with the parental Company: ‘I think they could contact us many times also perhaps just asking if everything is OK.’

5.3.5. Performance appraisal

Only Respondents 3 and 6 mentioned discussions about performance with the Parental Company: ‘[…] Client’s company contacts my company, so they provide feedback regarding my performance’ (Respondent 3). Respondent 6 informed that he discusses performance with the Parental Company yearly where questions about finding new mission and reward may be also considered: ‘[…] Every year we make interview about … how is going if I want to change if I want to change if everything is OK we can discuss the money and time like that […]’

That suggests that in Performance Appraisal for those Project Team members who are employed in one company and are on mission in Client’s Company both Project Managers from Client’s Company are involved as well as HR and Project Managers from a Parental Company.

5.3.6. Career Development

For Case 1 as team-member (Respondent 1) mentioned, career development is possible in term of skills development inside the project, moving into another project inside the firm (which means dispersement from current project) as well as application to Project Manager’s position in new project. As he explained, ‘I submitted candidacy for another project, I did not succeed, and HR talked to me to explain my weaknesses, so I could develop in future, so HR helped me to conduct work on lesson learned’ (Respondent 1). His Project Manager mentioned that should any issue arise the Company would support him: ‘[…] Usually if our project is cancelled we are assigned to another project. […]’
Support I would consider internal development. I think if I have any issue the company would support me [...]’ (Respondent 2).

Case 2 participants discussed that in IT industry there is no issue with career development. Project Team member (Respondent 3) clarifies that: ‘If after any project I’m not assigned to a new project, I’ll return to my company and wait until we have new projects. Of course, it is not good from competences point of view. However, IT industry develops everywhere and, so it is not difficult to find another job. Honestly, I’m not at all concerned about my career especially because there is very high demand for IT specialists in France.’ Project manager (Respondent 4) complements discussing that his career was grown from the developer role: ‘I think there is no need to support our career because we have more than enough projects, even sometimes we don’t have sufficient time to be concerned about our career. Probably if I was in different industry, I would be worried but nowadays this industry lacks specialists considerably. From the Company perspective, I evolved from software developer to project manager.’ (Respondent 4).

The Respondent 5 from Case 4 provided different perspective. It was pointed that person himself should be responsible for his career development ‘[…] if you want to become expert … to be successful in your career you always need to search challenge do not stay very long time in same mission and same project […]’ (Respondent 5), so it is up to person to search new temporary challenges. After completion of a project or in few years of working in a project he discusses with HR in own (parental) company and HR asks desires for new project for the employee: ‘[…] they ask what you want to do, what kind of project you plan for next project and so on and then they your wishes they explain to people who may search for you –so it will first work HR of our small firm for career’ (Respondent 5). In addition, this Project Team member became Project Manager in team in Client’s company, and his curiosity supported his career development: ‘my first job I was starting as programmer I was not analyst […] I had that curiosity and what I coded program I studied what does it mean in terms of finance […] since that was interesting for me and after that project I was appointed as analyst and now I’m PM […]’ (Respondent 5).

As the Case 4 Respondent (Respondent 6) mentioned, career development may happen through responsible HR specialist by requesting for new training, change of mission (programming language or sector): ‘[…] I can ask to change activity sector or programming language if I want to do more Java, I can move to another language or if I don’t like transportation I can move to financial system […]’ (Respondent 6). He also mentioned that for his career development only parental Company (not Client’s one) takes care since Client’s company just need to him to work on project. This change of projects by team member may be also be considered as job rotation.

It was observed, that displacement from projects for project team members happens by moving to other project during the project to another project inside the company or to another firm (Case 1) or to another Client’s Company through HR Representative or Project Manager in Consultant (Parental) Company (Cases 2 - 4).

5.4. Findings about IT Support Systems

All Respondents were asked what tools or systems are used for competences support. The Case 1 Company has two main IT support tools. First one is mini-social network like Facebook where programming-related questions are discussed. Second support tool is...
wiki which is used during project supporting newcomers (which may support induction) ‘we also have wiki which is more about project support rather than self-development. It is more during project level but not outside project boundaries. That knowledge sharing through wiki it is done [...] for new team member not to distract everyone, but follow instructions’ (Respondent 1).

The Project Manager from Case 2 (Respondent 4) also informed about Facebook page which is used to share various experience.

The Project Team Member from Case 3 (Respondent 5) discussed that in their projects wiki-like support system is used which is also supporting newcomers as well serves for self-learning of technical skills (programming language): ‘Yes, we have website ‘Allshare’ where we store all our documents and specifications all needed documents are saved and that is like Wikipedia of our team and when new person comes [...] we explain architecture and it is very important resource and when we code something or we may forget or we may not know we search and find all needed information’ (Respondent 5).

Current Project Client company for Case 4, as Respondent 6 discussed, uses specific software for task management tracking by Project Manager which facilitates communication with team members ‘we need someone manage all these task that’s why we are using task management system JIRA so our project manager are using that software to follow how we are working so that is very important for us so just keep track and for me the main functionality of PM is flowing us through this software so when we do not know what can we do we can ask question about it and how we can do.’ (Respondent 6). The other knowledge-management system is Software ‘Confluence’ which has all relevant documentation needed for project as well as previous deliverables ‘[...] it is called ‘Confluence’ [...] we document our new functionalities. Our documents, how we can configure how we connect wi-fi how we start project [...] Technical point view or functional point of project what we need to do in next cycle [...] we can find historical cycle we just come back and check if we introduced the errors or compare what we did and what asked.’ (Respondent 6).
6. Discussion

The objective of this chapter is to compare empirical findings with the theoretical framework established in Section 2 which would lead to conclusion when it will be discussed how research question and objectives are met. Discussion is provided four main themes presented previously in Empirical Findings.

6.1. Findings about Context in IT

1. Project type of studied projects were found to be various within the same IT Industry in France: some projects are shorter, and others are longer: one of the projects studies (Case 1) exceeding 10 years. Even these are all IT-related projects, those are provided to different industries.

2. Project complexity or uncertainty is caused by different factors. First, it was found that programmers and IT developers know technical knowledges but not always industry – specific background which requires clarity of tasks and deliverables during the projects from Project Managers. For long –term project uncertainty may be caused either by new regulations or communications with Authorities. Same project during routine support and maintenance is less complex however in case new regulations being introduced in financial sector where project is located complexity increases. It also in line with the summary of Bakhshi et al., (2016) that ‘Local laws and regulations’ complexity factor is one of most reported in the ‘Context’ category.

Continuous changes of Customer’s requirements and ability express their needs adds another complexity to meet deadline. Size of project also contributes to complexity which is also one of element for complexity in literature (Padalkar & Gopinath, 2016). In that respect Case findings complements previous research about project complexity summarized by Bakhshi et al., (2016) as ‘Uncertainties of scope’, ‘Uncertainty & clarity of objectives or goals’ complexity factors in the ‘emergence’ dimension of Complexity.

3. Organizational Structure has two implications. First, it matters how work processes in teams is arranged in IT industry – which happens in cycles. Secondly, often in France project team members have employment relationships with one company and working on another company. That affects organizational issues and human resource practices. Even though Bredin & Söderlund (2011) discussed human resource roles in inter-functional and intra-functional project work settings for Project Managers, results from viewpoints both from Project Managers in Parental Organization, Client’s organization provided richer understandings of human resource practices and roles in IT industry in France.

4. Challenges of IT industry in France are involved blurry responsibilities of Project Managers which includes Human Resource functions (Recruitment) as well as accountability for project success. People leadership as challenge was mentioned in majority of cases. Fast growth in terms of technologies is another challenge which facilitate continuous learning to keep up-to date with it. Pace of project and criticality of time is constituent of ‘Project Diamond’ framework (Shenhart & Dvir, 2007, p.p. 46-54), which Padalkar & Gopinath (2016) discussed as another element of uncertainty.
6.2. Findings about Skills/Competences

Different sets of skills/competences were clearly observed for Project Managers and Team Members.

1. **Project Team Members Technical competences** includes technical competences within IT (programming language being most often reported) which are used as base to assign them on projects.

2. Among **human competences** of Project Team members, in first turn, are team work, communication, openness, flexibility. It is important for team members to communicate with each other and share knowledges. Also, ability to consult and development of others are important for knowledge sharing. Technical competences are most important for project team members. However, when project team member assigns to work in client’s company, attitude, flexibility and adaptability are important.

Majority of literature studies discussed competences and skills of Project Managers however less attention is provided to skills and competences of project team members.

3. **Project Managers Technical Competences** were found as project specific - project management requirements, scope and deliverables, project organization, resource and project knowledge as well as context-specific (for example, financial background). It should be noted that technical software-specific skills and competences as important ones were not reported by Case Study Respondents, those are the most sought by employers in ICT industry in Australia (Ahsan, 2013) who needs very specific to have ‘solid understanding of software development’.

4. Human related competences of **Project Managers were** team-work, leadership and self-control which were most often reported, time-management, flexibility, problem solving, empathy and patience as personal traits were also mentioned. Findings suggested by Project managers states that human related skills are most important in IT Industry in France, which aligns with El-Sabaa (2001) where human related skills for Project managers are of predominant importance both irrespective of industry and Information Systems Projects particularly. Moreover, findings of the study complement conclusions of Cheng et al., (2005), Dainty et al., (2005) about importance of behavioral skills such as team-leadership, self-control, communication. However, even though study of Starkweather et al., (2010) discussed the importance of soft skills in IT industry providing the list in reducing order of importance - leadership, communication verbal and written skills, case findings of various projects in France revealed that, a part of those, team-leadership, self-control and problem-solving are most reported which enhance previous findings with the respect to projects in IT industry sector. It was also found that results delivered in study differs from the top five skills of Project Managers in Australia (Ahsan, 2013) specifically for IT industry (reported in reducing order of importance): 1. Technical Skills; 2. Communication; 3. Stakeholder Management; 4. Certification; 5. Time management. As was found, respondents highlighted that human related skills are most important. Certification for Project managers was not mentioned. Team-Leadership and team building in IT industry in France is much more important for successful delivery of projects compared to Australia (Ahsan, 2013). Team-leadership, problem-solving are those competences discussed by Clarke (2010) which were related to emotional intelligence constituents of Project Managers which were found statistically significant on the basis of study of 67 Project Managers in UK, moreover attentiveness (‘engagement
with project members in to build strong relationships, responding to their concerns, and building positive attitudes for project success empathy’ (Clarke, 2010) is positively related to empathy which is was also mentioned by Respondents as important.

6.3. Findings of HR practices in IT companies in France

1. **Assignment to the project** is the first practice used while project teams are built. According to findings of the current research this practice is exercised by project managers and line managers in IT industry in France. Project managers are assigned by line managers and have the responsibility to form the team considering the specific requirements of the project. The similar interaction is recognized by few researchers such as Bredin & Söderlund (2011). They discuss the importance in terms of interaction between HR, line and project managers to shape the positive outcome for project based organizations. Similarly, team members are assigned to the project on the basis of their competence in relation to the project. According to findings assignment to project is carried out in two ways either project managers rely on internal available employees or refer to external recruitment. This finding is confirmed by e Silva & Costa. (2013) as one of the most challenging HR practices which involves solid decision-making skills. Moreover, if the project is to be implemented in Client Company team member is first selected by parental company and then approved by Client Company.

2. **Recruitment and selection** are also identified by the findings as HR practice which is usually realized by either project manager or line manager. Unlike most of other industries recruitment process in IT industry in France is project managers’ responsibility especially because technical skills are better assessed by project specialists rather than HR specialists. However, findings of this research highlight the lack of involvement of HR department in IT industry and their close participation in the recruitment are recommended. The reason is that HRM is a separate profession which is better suited to select right people to the company. According to Dainty et al., (2009) this is a main employee resourcing practice to link permanent projects to networked projects.

3. **Trainings as part of Training and development** practice are used for competence development purposes in all the organizations which the researchers of the present research explored which is corroborated by Khan and Rasheed (2015) as well. Popaitoon & Siengthai (2014) in their research training, from ‘knowledge absorptive capacity’ and project success perspective. However, they are delivered in different ways according to companies. The first and second organization we studied inform the employees of the availability of funding for trainings for limited time in related domain. Thus, the project team member has the possibility to benefit or not from it. Also, findings confirm that all the trainings in the IT industry in France are technical. Therefore, they are usually regarded unproductive because team members assigned to projects in client company joins to teams consisted of people from different background. Consequently, these project members need to acquire suitable skills in order to cope with team change. Similarly, they need to obtain broad understanding of other related-domains to effectively collaborate with other team members. Findings of the present research highlights the emerging practices to compensate limitations of the training and development to enable project team members to enhance their skills or competences. These practices are knowledge-sharing, induction and lesson-learned.
4. **Knowledge-sharing** is commonly-recognized and confirmed by findings as one of main HR practices designed to support project-team members’ competence. PM has the responsibility to decide who will teach newcomers in the project, he asks someone from team, selecting him by some qualities to teach new team member. Also, as mentioned previously projects are unique in terms of competence requirements, thus, when team members are assigned to a new project depending on the skills required, they share their respective skills to fill eventual skill gaps in relation to the project. This practice is encouraged by project managers and preferred in most of the cases to organizational-level training programs. This preference can also be explained by the fact that time limitation prevents project members from considering trainings to maintain the competence level up to date.

5. **Lesson-learned** is gaining importance and employed as effective HR practice to enhance the competence of team members. According to findings after the completion of each project, a project managers or selected team member presents the project and shares with other employees the experiences, knowledge and issues faced during project implementation. Findings suggests that this kind of practice helps project members to get familiar of the issues that might happen and be aware of them. This finding is discussed by Ekrot et al., (2016) as part of HR knowledge management practice. It is recognized to contribute to competence enhancement in project – based organizations.

6. **Induction** at project level proves different from general induction as HR practice. Findings show that induction at project level is designed to present not only team members but mainly the ongoing project to newcomer and facilitate his or her understanding regarding the project. Therefore, given its difference as perceived by team or project members this practice is considered to be efficient in terms of competence development.

7. **Internal Rotation** is a practice used by a company to enhance project members’ skills. As mentioned previously projects vary in terms of skill requirements, therefore assignment to different projects proves to be effective method for both project managers and project members to enhance their task-related skills. This finding is confirmed by Medina and Medina (2014). To support this finding, Savelsbergh et al., (2016) mentioned that Project managers on organizations mostly increase their knowledge through projects and consequently learning process happens outside the formal process which is usually designed by HRM in traditional organizations.

8. **Employee support, retention:** Findings show that employee support and retention are missing in IT industry in France. Similarly, only non-organised support is provided by project managers to team members. However, project members are not supported by established HR practices. This finding contradicts Ekrot et al., (2016) who develops ‘Project Management Competence Retention Model’ which recommends long-term HRM plan including knowledge management based on various 'lessons learned' processes. They found out that long-term development plan has positive influence on the retention of project managers’ competences and ultimately positively impacts on project success. They claim that retention of highly-qualified project managers is one of the key success factors for the business. In the case of project team members assigned to Client Company the absence of support is more visible. Consequently, both project team members and project managers would appreciate the involvement of HR specialists at company level to support employees from both task-related and personnel development
perspectives. However, from career development point of view neither project members nor project managers are concerned about their career. According to findings this industry has experienced extensive development which offers wide career prospects to IT specialists. Likewise, high demand for qualified IT specialists opens new possibilities for career development. On the other hand, the existing need for IT specialists should be considered by IT companies to put into place appropriate employee retention plans in order to be able to keep employee turnover level at lower level.

9. **Performance appraisal** is accomplished mainly by project managers and line managers and often used to negotiate reward or career development and ultimately has positive impact on competence development which is also mentioned by Medina and Medina (2014) and Dainty et al., (2009). It is usually conducted by project managers and project members for team members and by line managers for project managers. Findings regarding performance appraisal provide different perspectives and indicate that depending on the project type, performance appraisal is realized in two ways. If the project member is assigned to Client Company the team member undergoes double evaluation both by project manager in Client Company and project manager from parent company. At the same time, project member requests appraisal from client company at the end of each project and delivers it to parent company to negotiate his/her salary. However, the IT industry in France does not use standardized performance appraisal as HR practice which is in contrast with Popaitoon & Siengthai (2014) suggestions according to which HRM needs to be conceptualized in project-oriented organizations and applied as set of practices. Yun et al., (2016) also highlight the importance of conceptualizing human resource management on projects and stress that several HR practices such staffing of teams, training and increasing the capability of the people involved in the training has extremely positive impact in project-based organizations.

10. **Career Development** are believed as one of the most important HR practice in project-based organizations due to the temporary character of projects. The current literature argues that project members should be supported through career development programs. Also, specific nature of projects requires companies to establish career management practices to attract the qualified employees in project-based organizations and make project managers to stay in the company (Bredin & Söderlund, 2013). Likewise, Hölzle (2010) emphasizes the importance of career development practice at organizational level for project members. Asquin et al., (2010) mentioned negative effect of project-based environment on individuals due to temporary character of projects. However, findings of the current research contradict the existing literature and proves the absence of such programs in IT industry in France. Employees mentioned that if they need any support their company is ready to provide it, but these only happens if requested. In contrast, all the project managers interviewed mentioned that they were promoted to that position through internal promotion. This proves that even though the career development programs do not exist, internal promotion or internal rotation help project members to achieve higher positions within their company.

6.4. Findings about Competence Support systems

It was revealed that there are three main types of systems used to facilitate communication during projects between team members and project managers as well as to manage the tasks and store all the relevant data.
1. First one was reported as social network like Facebook group for communication.
2. Second one was found as wiki, or website or knowledge management system which used to support project as well as to introduce to newcomers to team all relevant documentation as well as for self-learning.
3. Third system is used as task management tracking software which is necessary for management of project by Project manager.

Even though Loufrani-Fedida & Saglietto (2016) discussed project support tools in software – oriented divisions on collective and organizational level, the findings provided additional details how in IT industry in France those tools enhance communication, self-learning of technical skills and knowledge-sharing process.

Updated Conceptual model developed on the basis of findings from empirical data is presented in Figure 5. The HRM practices highlighted by bold font contribute mainly to development hard skills/competences while identified support tools facilitates soft skills acquisition. Main Human Resource Practices contributing to competences enhancement are Knowledge-sharing, trainings, Induction, Lesson-learned and internal rotation. From another hand, it is on basis of skills and competences for project team members those are recruited and assigned to projects by Project Managers.

Competences were found divided into two themes – ‘technical’ competences and ‘human’ competences, separately for Project Managers and Team Members. Context, specifically type of project as well uncertainty and complexity affect necessary competences needed. Finally, support systems (Wikipedia and Facebook) is used to facilitate technical skills development, whereas task management systems are helpful to monitor ongoing progress of a project.

**Figure 5: Updated Conceptual Model**

- **HR Practices**
  - 1. Assignment to Projects
  - 2. Recruitment/Selection
  - 3. Trainings
  - 4. Employee support/retention
  - 5. Performance appraisal
  - 6. Career Development
  - 7. Knowledge sharing
  - 8. Induction
  - 9. Lesson Learned
  - 10. Internal rotation

- **Competences**
  - 1. Project team members technical competences
  - 2. Project Team members human competences
  - 3. Project Managers technical Competences
  - 4. Project Managers human Competences

- **Context**
  - 1. Project type
  - 2. Complexity and Uncertainty
  - 3. Organizational Structure
  - 4. Challenges in IT

- **Support Systems**
  - 1. Wikipedia
  - 2. Facebook
  - 3. Task Management System
7. Conclusions

Empirical data analysis in support with theoretical section enabled authors of the current research to reach the four objectives set in Conceptual framework to answer the research question “How HR practices contribute to project team members’ competence development in project-based organizations in the IT Industry?”.

The current literature recognizes the importance of HRM practices in Project-based organizations. However, HR practices contributing to competence enhancement of project team members lack empirical exploration. Therefore, the authors of the present research found crucial to investigate the relationship between HR practices and project team members’ competences. The answer to the research question is provided by identifying the context of IT projects, competence/skills support tools, general HR practices and necessary competences/skills for both project managers and team members in IT industry in France. The research is based on multiple case study from four IT companies operating in France. Six semi-structured interviews are conducted through both WhatsApp and Skype for data collection which are later analysed based on thematic approach. Thus, final analysis allowed the authors to build the theoretical framework based on interpretations driven by empirical data. Besides, findings provide clear understanding of which HR practices are used in IT industry in France to enhance project team members’ competences.

Data analysis allowed to identify key practices employed in project-based IT companies to support competence development of project team members which are knowledge-sharing, training, induction, lesson-learned and internal rotation. Besides, social media and dedicated website were identified as major competence-support tools in IT industry in France. IT context is regarded by both project team members and project managers as uncertain which is inherent to IT projects. Another crucial finding of the current study is that despite the importance of soft skills both for project managers and team members, during recruitment or trainings only hard skills are considered. Based on findings discussed in the previous section the following chart was built (Figure 6).

Figure 6: HRM practices contributing to competence development.
Moreover, the selection for the project management position is exclusively realized through internal recruitment. Further, the existing literature recognizes training as main HR practice for competence development, however it was found that even though this practice is still referred to, it is not preferred because of time constraint and sometimes considered ineffective. Instead, knowledge sharing and lesson learned at project level are the most approved.

Similarly, in contrast with the literature, findings conclude that despite the absence of career support tools neither project managers nor project members are concerned about their career development. This can be explained by steady increase in IT industry in France and high demand for IT specialists. Since project managers in IT industry in France possess IT-related background they can easily switch to different companies. Consequently, companies in IT industry should consider this point to improve employee retention. The last finding highlights the main concern of project managers regarding the HR specialists who only considered carrying out the organizational functions in the companies.

Managerial Implications

Managerial implications of this research are believed to provide practical contribution to project management and human resource management practitioners. However, it must be emphasized that the characteristics of multiple case study and interpretive subjective nature of the qualitative research restricts the transferability of the findings. Therefore, managers should be careful regarding the generalization of the findings. Thus, research findings provide the following managerial considerations to practitioners.

It should be noted that, requirements for competence/skills vary from project to project thus, project team members are supposed to possess the necessary skills to deliver successful projects. Therefore, IT companies should facilitate for project team members the acquisition of soft skills as well. Especially, it was found that some IT projects are realized in Client Company as a result, team members joining new teams feel necessity for team-related soft skills. Also, to ensure successful career development to higher positions, project members need to acquire soft skills which are considered to be important but totally disregarded at all organizational levels in IT industry in France.

Secondly, findings suggest that the identified HR practices designed to enhance competences are not organized in a structured way and team members are subject to self-development which is not always productive. Effective collaboration between HR specialist, PM and Line managers would help to handle this situation.

Third implication from company perspective consist of increasing employee retention. Since there is high demand for IT specialists in France, additional long-term support plans through other HR practices such as employee engagement, motivation and reward incentives could increase employees’ engagement towards the company.

Theoretical implications

The current research explored the relationship between HRM practices and project team members Competence development that is considered to be under-researched by existing literature. General findings are corroborated by the existing literature, but they also
constitute contrast with some aspects, therefore provide some new insight to the existing literature. Similarly, the present research considers HR practices at project level and its contribution to competence development within projects which is rarely considered. In contrast with the literature, some practices identified through the current research such as knowledge-sharing, lesson-learned and internal rotation, in reality are more favoured compared to traditional HR practices. Similarly, knowledge support tools through social media are more and more used. The findings regarding the importance of soft skills are repeatedly discussed in the current literature however, they contradict the real-life preferences discovered in IT industry in France. With this regard, the findings support the importance of soft skills while the companies in IT industry promote the acquisition of hard skills. These findings bring significantly new insights to the existing literature.

Societal implications

Societal implications are believed to be beyond academic research providing some insights relevant to the benefit of society. First, it worth to notice that even though soft skills are both found to be important for Project Managers and Project Team Members, no trainings in that domain are supported by Companies. This is something that would be beneficial to cultivate not only in job-related area but throughout education in schools and universities. Perhaps, soft skills are needed to be developed not just during trainings or seminars but during much wider and longer programs supported by educational non-profit or governmental agencies.

Second, employment relationships are being changed making jobs less stable and less secure as widely known. Moreover, project-based work was believed to be less stable for Project Based Managers and Team Members. However, research findings demonstrate that in IT industry in France there is no concern about career – there is high demand of IT professionals. From one hand, as was discussed before, Companies need to stimulate employee retention mechanisms, wider implications are that people with the experience in IT or other technology-related industry may find jobs easily whereas it is not always the case for another industries. High demand of IT specialists may facilitate Companies to develop programs to invite and develop motivated newcomers with experience from another industries with help of knowledge sharing, induction practices and IT support tools.

Limitations and future research propositions

Due to the inherent characteristics of the employed methodological framework, the current research is subject to some limitations. Qualitative method and interpretive approach may result in various biases in terms of findings, even though, the suggested measures have been taken to avoid them. As a result, future research may examine “HRM practices contributing to project team members’ competence development” by adapting quantitative approach which would result in generalizable results in the field under investigation. Despite the researchers tried to minimize data collection biases by the presence of two researchers and initially agreed sufficient number of interviews, some of them were cancelled at the end as well as access to organizations’ documentation were rejected. Thus, future study adapting the similar approach can overcome the faced situation by incorporating wider sources and using more organizations from different countries or industries to conceptualize the practices defined in the present research. Similarly, data collection through semi-structured interviews may raise concerns in terms
of reliability of the research. Despite the researchers referred to the recommended measures to limit the biases, it is believed that quantitative research using in-depth interviews would handle this situation. Also, language-related issues during the interview constitute limitation to the current study. Researchers used three different languages such as French, Russian and English to conduct interviews which are not mother tongue for at least one of the researcher. Therefore, future research should consider these limitations and favour face-to-face interviews with participants. Further, the current research discovered that in IT industry in France project managers play also HR specialist role through set of HR practices. Therefore, future research on project managers HR role on competence development may be an interesting topic.
References:


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Attachment 1. Interview Guide.

Human Resource Practices in Development of Project Managers competences

(Interview guide for Project managers)

We are two Masters Students pursuing international Masters in Strategic Project Management at MIP Politecnico di Milano School of Business (Milan), Heriot-Watt University (Edinburgh) and Umeå University School of Business and Economics. In our Master thesis we are investigating relationship between human resource management practices in Project Teams from Project Managers / Project team members’ perspective in Project Based Organizations as well as skills (competences) necessary in IT Industry. For this purpose, we would like to carry out this interview to find out how this question is addressed in your company.

Please note that all data will be treated confidentially and used for the research only.

Your answers may be anonymous if you prefer so.

We ask permission to record conversation.

<table>
<thead>
<tr>
<th>Question</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Could you please tell us briefly about your job role, department, and years of experience?</td>
<td>Context</td>
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<tr>
<td>What kind of projects you manage?</td>
<td>Context</td>
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<tr>
<td>To what extent IT projects are complex?</td>
<td>Context</td>
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<tr>
<td>What skills or competences you consider the most important as PM?</td>
<td>Skills/Competences PM</td>
</tr>
<tr>
<td>What are the most important skills for team members?</td>
<td>Skills/Competences TM</td>
</tr>
<tr>
<td>Do you have any kind of relationship with HR department or specialist?</td>
<td>HRM Practices</td>
</tr>
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<td>How teams are build you are involved in?</td>
<td>HRM-Practices</td>
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<tr>
<td>How company support skills development</td>
<td>HRM-Practices</td>
</tr>
<tr>
<td>How do you fill your skill gaps of team members?</td>
<td>HRM-Practices</td>
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<tr>
<td>Given the temporary nature of the projects, how your career is supported?</td>
<td>HRM-Practices</td>
</tr>
<tr>
<td>What is the main problem regarding project management profession?</td>
<td>Context</td>
</tr>
<tr>
<td>Do you think that you need more help from your company?</td>
<td>HRM-Practices</td>
</tr>
<tr>
<td>Do you have any competence support system in your company?</td>
<td>Support Systems</td>
</tr>
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